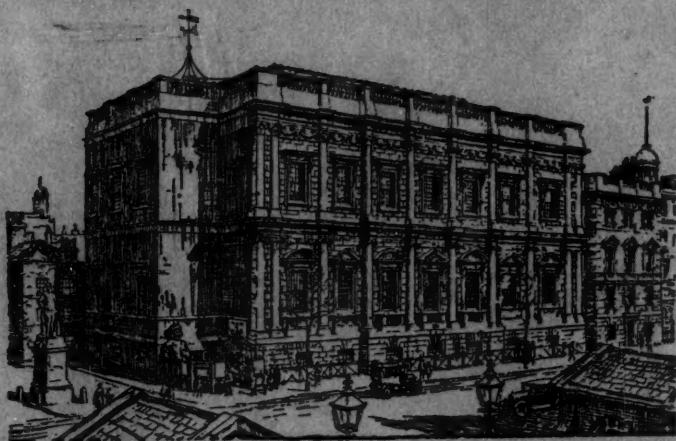


AUGUST, 1936



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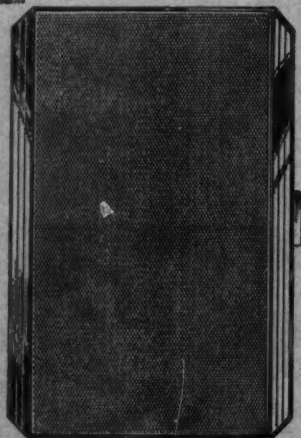
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H.R.H. the Duke of York, K.G., K.T., K.P., G.C.M.G., G.C.V.O., has honoured the Institution by becoming Vice-Patron.

Vice-President.

The Council regret to have to record the death of Field-Marshal the Viscount Allenby, G.C.B., G.C.M.G., G.C.V.O., D.C.L., LL.D.

Field-Marshal Sir A. A. Montgomery-Massingberd, G.C.B., K.C.M.G., A.D.C., has been elected Vice-President to fill this vacancy.

Council.

The Council regret to report that Colonel C. H. Colvin, C.B., D.S.O., has resigned from their membership owing to ill health. Colonel Colvin has served on the Council since 1914, and has also been Chairman of the Museum and General Purposes Committee and a member of the Finance Committee for many years.

Major-General J. R. M. Minshull-Ford, C.B., D.S.O., M.C., has been elected to fill this vacancy.

General Sir J. F. S. D. Coleridge, K.C.B., C.M.G., D.S.O., having been appointed to a command in India, has resigned from the Council. Major-General R. C. Wilson, C.B., D.S.O., M.C., has been elected to fill this vacancy.

New Members.

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Lieutenant O. Brocklebank, R.N.
Lieutenant J. W. S. Corbett, R.N.
Lieutenant B. C. Durant, R.N.
Captain W. S. North, Royal Marines.
Lieutenant A. C. Newsom, Royal Marines.
Lieutenant N. C. Ries, Royal Marines.
Sub-Lieutenant H. Wake, R.N.
Sub-Lieutenant D. F. Godfrey-Faussett, R.N.
Commander St. J. A. Micklethwait, R.N.
Commander H. F. Nalder, R.N.
Commander K. M. L. Robinson, R.N.
Lieutenant-Commander W. K. Edden, R.N.

Lieutenant-Commander T. S. B. Gubbins, R.N.
Captain E. A. Aylmer, D.S.C., R.N.
Lieutenant J. N. Snow, Royal Marines.
Lieutenant R. D. Houghton, Royal Marines.
Captain C. Moody, R.N.
Lieutenant-Commander E. G. Heywood-Lonsdale, R.N.
Captain R. M. Servaes, R.N.

ARMY

Lieutenant C. W. H. Rice, Royal Tank Corps.
Major G. R. Clarke, 3/2nd Punjab Regiment, I.A.
Lieutenant P. Hopkinson, 3/2nd Punjab Regiment, I.A.
Lieutenant J. F. Worsley, 3/2nd Punjab Regiment, I.A.
Lieutenant L. F. E. Kewley, 4/2nd Punjab Regiment, I.A.
Major C. E. Penny, 3rd Bn. 9th Jat Regiment, I.A.
Lieutenant G. S. N. Richardson, 2nd K.E.O. Gurkhas, I.A.
Lieutenant H. A. H. Radcliffe-Smith, Royal Engineers.
Lieutenant J. F. Rock, Royal Engineers.
Lieutenant A. J. Hamilton, Royal Signals.
Captain K. O. N. Foster, The Royal Northumberland Fusiliers.
Captain R. W. Gellan, Royal Engineers (T.).
Lieut.-Colonel Sir Colin A. Jardine, Bart., D.S.O., M.C., Royal Artillery.
Captain J. Milne, late 4th Bn. The Leicestershire Regiment.
Major W. Tatham, M.A. (Oxon.), 1st Cadet Bn. The London Regiment.
Lieutenant R. J. Hereford, The King's Shropshire Light Infantry.
Major J. R. Davies, M.C., Royal Artillery.
Lieutenant S. K. Gilbert, Royal Engineers (S.R.).
Captain G. E. Prior-Palmer, 9th Lancers.
Lieut.-Colonel S. C. Byrne, T.D., D.L., late 11th London Regiment.
Major E. W. Polson Newman, B.A., F.R.G.S., late The Cameronians.
Captain L. N. Tyler, Royal Army Ordnance Corps.
Captain A. H. L. Gibson, 4th Australian Light Horse Regiment.
Captain H. E. Rance, Royal Signals.
Lieut.-Colonel W. A. J. Simpson, D.S.O., M.C., Royal Artillery.
Lieutenant G. W. F. Stewart, Royal Artillery.
Lieutenant J. C. Wilder, The Royal Berkshire Regiment.
Robert Vernet, M.C., late Temporary Major, General List.
Lieutenant C. D. Griffiths, late The Royal Welch Fusiliers.
Lieutenant D. M. Cornah, 4th Bn. 11th Sikh Regiment.
Lieutenant E. C. Yeldham, The Hampshire Regiment.
Lieut.-Colonel J. G. Halsted, M.C., The Loyal Regiment.
Captain T. D. F. Macneal, 8th Bn. The Argyll and Sutherland Highlanders.
Lieut.-Colonel H. Conder, 2nd Bn. 16th Punjab Regiment.
Captain D. C. Tennent, The York and Lancaster Regiment.
Lieutenant C. A. M. Cumberlege, Royal Artillery.
Lieutenant W. H. F. Wingate, Royal Artillery.
Lieut.-Colonel J. A. A. Griffin, D.S.O., The Lincolnshire Regiment.
Major H. St. G. Thoyts, M.C., The Lincolnshire Regiment.
Captain C. T. Ingle, The Lincolnshire Regiment.
Lieutenant J. E. T. Pim, The Lincolnshire Regiment.
Major-General R. C. Wilson, C.B., D.S.O., M.C., Indian Army.

Captain H. H. E. Geddes, Royal Army Service Corps.
Colonel J. C. Wickham, D.S.O., late Royal Engineers.
2nd Lieutenant T. M. Kirkwood, The Scottish Horse.
Captain E. L. Marsh Kellett, Royal Engineers.
Lieutenant M. S. E. Petre, The Duke of Cornwall's Light Infantry.
2nd Lieutenant J. D. Blois, Irish Guards.
2nd Lieutenant N. S. P. Whitefoord, Irish Guards.
Lieut.-Colonel J. A. H. Gammell, D.S.O., M.C., The Queen's Own Cameron Highlanders.
Captain A. W. Byrne, T.D., late The Artists Rifles.
Captain C. H. Lynes, The King's Shropshire Light Infantry.
Lieutenant R. M. Villiers, The Cameronians (Scottish Rifles).
Lieutenant C. E. B. Catt, 5th Bn. 14th Punjab Regiment (Pathans).
Lieutenant G. W. Lathbury, 43rd Light Infantry.
Captain J. B. Worton, The Middlesex Regiment.
Major O. Price, The Duke of Wellingtons Regiment.
Lieut.-Colonel A. P. Ford-Moore, 10th London Regiment.
Lieutenant T. A. G. Pritchard, The Royal Welch Fusiliers.
Lieutenant B. N. Whitty, The Welch Regiment.
Major R. E. Bliss, Royal Canadian Artillery.
2nd Lieutenant J. G. Allen, The Dorsetshire Regiment.
Lieutenant K. E. Holmes, Royal Signals.
Lieutenant G. P. Shearer, Royal Engineers.
Lieut.-Colonel R. MacKenzie Scobie, M.C., Royal Engineers.
Lieut.-Colonel H. A. F. Crewdson, 8th Bn. Sherwood Foresters.
Lieutenant C. G. Butcher, 2nd Bn. 6th Rajputana Rifles.
Captain S. M. Grant, 2nd Bn. 6th Rajputana Rifles.
Lieutenant W. G. Mortimore, 2nd Bn. 6th Rajputana Rifles.
2nd Lieutenant C. S. A. Prideaux, 2nd Bn. 6th Rajputana Rifles.
Lieut.-Colonel C. L. Andrewes, M.C., 1st Bn. (K.E.O.) 11th Sikh Regiment
Captain M. Wilson, The Loyal Regiment.
Major G. E. Malcolm, M.C., The Gordon Highlanders.
Major J. O. Campbell, D.S.O., M.C., Royal Artillery.
Lieutenant K. C. Cooper, Royal Tank Corps.
Major J. R. W. Curtois, M.C., Royal Artillery.
2nd Lieutenant P. J. Glover, Royal Artillery.
Lieutenant W. G. Daubeney, Royal Signals.
Captain H. T. M. Williams, The Royal Welch Fusiliers (R. of O.).
Lieutenant R. T. K. Pye, The Sherwood Foresters.
Lieut.-Colonel K. S. Torrance, O.B.E., M.C., The Manchester Regiment.
Lieutenant E. A. T. Boggis, The Wiltshire Regiment.
2nd Lieutenant A. F. M. Jack, Royal Engineers.
Lieutenant I. S. H. Hooper, The West Yorkshire Regiment.
Gentleman Cadet J. W. Tomes.
Lieutenant E. S. Bird, The East Surrey Regiment.
Captain M. C. R. Garraway, 1st Punjab Regiment.
2nd Lieutenant N. D. P. Healing, The King's Own Yorkshire Light Infantry.
Captain R. H. I. Hopkins, 1st Bn. 19th Hyderabad Regiment (Russell's).
Captain C. H. John, M.C., Southern Provinces Mounted Rifles, A.F. (I.).
Captain H. W. F. Walker, Coldstream Guards.
Major W. P. B. Ashton, M.C., Royal Army Ordnance Corps.

Major J. H. Wilkinson, 2nd Royal Lancers (Gardner's Horse).
 Dr. W. E. H. Bull, M.C., M.B., B.Ch., late Captain, R.A.M.C. (T.F.).
 Lieutenant G. F. Cooke, Royal Artillery.
 Captain W. W. Cowan, Royal Artillery.
 Captain N. H. Edes, Royal Signals.
 Lieutenant P. J. Palmer, Royal Signals.
 Major-General J. R. M. Minshull-Ford, C.B., D.S.O., M.C.
 Captain T. E. Parry, The 23rd London Regiment (The East Surrey Regiment) (T.A.).
 2nd Lieutenant J. R. Rawlence, Royal Engineers.
 Captain R. E. S. Yeldham, The Sherwood Foresters.
 Lieutenant E. M. de Brett, Royal Artillery.
 Major D. L. G. Carleton-Smith, late 1st King's Dragoon Guards.
 Major D. Whiteside, Royal Artillery, T.A. (Reserve).
 Captain H. J. Laverty, M.C., The Essex Regiment.
 Captain R. L. Simpson, M.C., 18th K.E.O. Cavalry, I.A.
 Lieutenant E. P. Young, R.A.
 Brevet Major J. A. Barstow, M.C., *p.s.c.*, The Black Watch.
 Lieutenant R. G. B. Innes, The Seaforth Highlanders.
 Lieutenant A. Jolly, Royal Tank Corps.

ROYAL AIR FORCE

Flight-Lieutenant V. B. Bennett, R.A.F.
 Squadron-Leader J. L. Airey, D.F.C., R.A.F.
 Flight-Lieutenant W. H. Hutton, R.A.F.
 Flying-Officer H. H. Hilliar, R.A.F.
 Squadron-Leader J. H. Butler, R.A.F.
 Flying Officer R. J. Knights-Whittome, R.A.F.
 Pilot Officer D. P. D. G. Kelly, R.A.F.
 Flight-Lieutenant M. V. Delap, R.A.F.
 Flight-Lieutenant D. M. T. Macdonald, R.A.F.
 Flight-Lieutenant G. F. Macpherson, R.A.F.
 Flying Officer S. W. Needham, R.A.F.
 Flight-Lieutenant R. R. Nash, R.A.F.
 Wing-Commander G. E. Gibbs, M.C., R.A.F.
 Flight-Lieutenant N. H. Woodhead, D.S.C., R.A.F.O.

CIVIL FUNCTIONARIES

D. Bonner Smith, Esq., F.R.Hist.S., Admiralty Librarian.

Suspension of Entrance Fee.

As a temporary measure and especially to enable as large a number of officers as possible to avail themselves of the facilities offered by the Institution during the period while His Majesty's Forces are being increased, the Entrance Fee has been suspended.

Officers of all ranks whose names appear on the current official lists can, therefore, join the Institution by paying the annual subscription of £1 5s. only. Membership will date from the 1st January.

Sub-Lieutenants and Sub-Lieutenants (E) R.N.—Life Membership.

The Admiralty have approved that the £10 prize awarded to Sub-Lieutenants and Sub-Lieutenants (E) who obtain all first-class certificates when passing for Lieutenants and Lieutenants (E) R.N., may be devoted to the payment of half their Life Membership of the Royal United Service Institution.

Gold Medal Essay (Military) 1936.

The following subject has been selected :—

“ Tactical and administrative movements in modern armies have been radically affected by the introduction of the internal combustion engine. Discuss the possibilities of its use in the British Army in assisting to overcome the strength of modern defence and in countering the increasing threat of air action.”

Essays must reach the Institution by the 15th November, 1936. A copy of the rules governing the competition can be supplied on application to the Secretary.

Change of Address.

Members are reminded that they are responsible for keeping the Secretary informed of any change of address. Non-receipt of the JOURNAL is almost invariably attributable to the fact that the member has not notified his movements.

LIBRARY**Facilities for Borrowing Books**

The special attention of Members who are paying the comprehensive annual subscription of £1 5s. od., is invited to the fact that they are thereby entitled to the full privileges of the Lending Library without further charge. These include the right to have sent to them not more than four volumes at a time on loan, the Member paying postage both ways.

Old Members who have not wished to conform to the new arrangement and who are still paying the original subscription of £1 1s. od., must pay an additional subscription of 10s. per annum in order to belong to the Lending Library.

All Members are, of course, free to use the Library when they visit the Institution.

Rules Governing Return of Books

The attention of Members is invited to the following Regulations governing the retention and return of books :—

- (1) Certain books, for which there is a special demand, must not be retained longer than a fortnight after the date of receipt. A notice to this effect will be found in the book.
- (2) In the United Kingdom.—Books must normally be returned within one month of the date of issue ; but the Librarian is authorized to make extensions of one month at a time on application by a Member, up to a maximum of three months from the date of issue, if the work is not required by another Member.
- (3) Stations Abroad.—When books are sent to Members abroad the same rules apply as for the United Kingdom, except that “ the date of receipt is substituted for “ the date of issue.”

N.B.—IN VIEW OF THE INCREASING DEMAND FOR BOOKS FROM THE LENDING LIBRARY, IT IS ESSENTIAL IN THEIR OWN INTERESTS THAT MEMBERS SHOULD ADHERE STRICTLY TO THE RULES GOVERNING THE RETURN OF BOOKS. FAILURE TO DO SO IS CAUSING MUCH INCONVENIENCE, AND INVOLVING THE INSTITUTION IN UNNECESSARY EXPENSE AND CLERICAL LABOUR.

JOURNAL

February Journals.

Owing to the influx of new members, there has been a heavy demand for the JOURNAL of February, 1936. Will any member who has finished with his copy kindly return it in order to assist in replenishing the stock.

MUSEUM

Gift by H.M. the King.

H.M. the King has presented to the Museum the uniform of the King's Colonial Regiment, raised during the South African War, which was worn by King George V., when Prince of Wales, as Colonel-in-Chief.

SPECIAL EXHIBITION

"Our Air Forces—Past and Present."

A Special Exhibition illustrating the development of our Air Forces from the days of the Royal Flying Corps and Royal Naval Air Service in the Great War up to the expansion of the Royal Air Force in the present year is now showing and will be retained throughout the summer holidays and autumn. It is arranged in the following sections :—

- (1) A large display of scale models of aircraft, ranging from the most famous types of the War to those with which the R.A.F. is being equipped to-day, in appropriate scenic settings.
- (2) A unique collection of personal relics, medals, and pictures associated with the most famous V.C. airmen and their intrepid deeds during the War, most of which have been specially lent by relatives.
- (3) Exhibits connected with the organization, work and equipment of our Air Forces from earliest times up to the present; many specially lent by the Air Ministry.
- (4) A scene, depicting in models the essential units of an anti-aircraft group—gun, searchlight, listening post, etc.
- (5) An extensive gallery of photographs.

Additions.

- (8838) Keys of the Kashmir Gate, Delhi.—Presented by O. F. Waterfield.
- (8839) Model of a Board of Trade life-saving wagon.—Given by Captain P. B. Garratt, R.N.
- (8840) Service water-bottle, Crimean period.—Presented by G. Clarke.
- (8841) Letter from Lord St. Vincent.—Presented by General J. H. W. Pollard.
- (8842) Belt buckle, Queen's Own Cameron Highlanders.—Given by Captain M. J. H. Wilson.
- (8843) Belt buckle, Queen's Royal Regiment.—Presented by the Regiment.
- (8844) Belt buckle, Royal Sussex Regiment.—Presented by the Regiment.
- (8845) Sabretache, 2nd West Yorkshire Yeomanry Cavalry.—Presented by Captain the Marquess of Cambridge.
- (8847) Water-colour painting of H.M.S. "Marlborough."—Presented by E. C. Waters.
- (8848) Water-colour painting of Field-Marshal Earl Haig.—Presented by S. V. Leigh.

- (8849) George II half-crown, struck from bullion captured by Privateers under Admiral Anson.—Presented by Commander R. P. I. de Sausmarez, R.N.
- (8850) Full-dress tunic, S.S.M. Instructor, Royal Canadian Dragoons.—Presented by F. J. Dee.
- (8851) Set of badges and buttons, Inns of Court Regiment.—Presented by R. G. Rivis.
- (8852) Grenadier head-dress, Egyptian Guard Corps, 1860.—Presented by Miss Rogers.
- (8853) Collection of medals.—Presented by Mrs. Home.
- (8854) Uniform of the King's Colonial Regiment, worn by King George V. when Prince of Wales, as Colonel-in-Chief.—Presented by H.M. King Edward VIII.
- (8855) Belgian five-chambered revolver captured from a Turkish officer on the Suez Canal, February, 1915.—Presented by Colonel Reinhold.
- (8856) Portrait of General Gordon.—Presented by the Countess of Shaftesbury.
- (8857) Hull model of a warship, period 1706.—Presented by Colonel A. E. Palmer.
- (8858) Piper's belt buckle, 3rd Bn. Royal Scots Fusiliers.—Presented by the Regiment.
- (8859) Map of Zululand, carried in the field by Prince Napoleon.—Presented by Colonel E. F. Gosset.
- (8860) Model of a Bristol "Blenheim" medium bomber.—Presented by the Bristol Aeroplane Co., Ltd.

Attendance.

The amount taken for admission during the past quarter was :—

£81 12s. 6d. in May.
 £133 13s. 0d. in June.
 £158 19s. 6d. in July.



By courtesy of Admiral Sir Richard Phillimore,
G.C.B., K.C.M.G., M.V.O., and the Officers of
No. 2 Flying Training School.

From a picture by Lt.-Colonel Harold Wyllie, O.B.E.

AIRCRAFT VERSUS CARRIER

H.M.S. "FURIOUS" ATTACKED BY GERMAN BOMBERS, 1918

AIRCRAFT VERSUS CARRIER

AN EPISODE OF THE GREAT WAR.

On 18th June, 1918, H.M. Aircraft Carrier "Furious," flying the flag of Rear-Admiral R. F. Phillimore, C.B., M.V.O., was operating in the North Sea when she was attacked with bombs by two German seaplanes. They returned to Sylt and reported the ship's position.

At about 1 p.m. the "Furious" was found by two enemy bombers, who dropped at least four bombs. She replied with her two A.A. guns and sent up two Camel fighters, one of which shot down one of the bombers. The pilot, who was taken prisoner, attributed their failure to hit the ship to her excellent A.A. fire.

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All communications, except those for perusal by the Editor only,
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THE DEVELOPMENT OF CIVIL AVIATION

By LIEUTENANT-COLONEL SIR FRANCIS SHELMEKDINE, C.I.E., O.B.E.

On Tuesday, 10th March, 1936, at 3 p.m.

THE RIGHT HON. THE VISCOUNT SWINTON, G.B.E., M.C., in the Chair.

THE CHAIRMAN, introducing the Lecturer, said that not only the Air Ministry but all air interests in the country, were fortunate in having a man of Sir Francis Sheldermine's experience and capacity as Director-General of Civil Aviation. Like many members of the Institution, he had had a good military training, he was a very successful Director of Civil Aviation in India, and he came to his present post with that experience. He had new problems coming up before him every day, and he always faced them with imagination and sane judgment. If ever there was a case in which teamwork was wanted it was in dealing with the problems of civil aviation. It was quite right that the Air Ministry should be the Department primarily and finally responsible, but the more he, the Chairman, saw of these big problems of the Empire routes and the international routes the more convinced he was that they far transcended the functions and experience of any single Department. They included, of course, finance: no air service in the world covering long-range air routes was yet self-supporting. The object should be to reach as soon as possible the time when civil aviation would be an economic proposition; that involved the wise expenditure of public money, and so the Treasury came in. The Board of Trade came in because it had interests in trade all over the world. The Post Office obviously had to come in as a partner, whether for internal mails or for Empire mails or international mails. Civil aviation also needed the co-operation of the Foreign Office, the Dominions Office, the Colonial Office, and the India Office.

If civil aviation was to be run on right lines, decisions must be taken quickly, and those decisions must represent the best collective mind of every Department concerned. Therefore we had a standing Committee, with the permanent head of the Treasury in the Chair, with Sir Francis always there, and with the Post Office, the Board of Trade, and all the other Departments represented upon it. Over and

over again during the last six months it had been possible to secure rapid decisions, made with complete agreement by all the Departments concerned.

In all this work Sir Francis Shelmerdine had played a very distinguished part.

LECTURE.

THE present lecture is not intended to be a Progress Report on Civil Aviation since 1932, when I last had the honour of addressing you, nor in the limited time at my disposal can I hope to give you a complete picture of what has happened during the last four years. For those who wish to make a close study of aviation statistics, the Annual Progress Reports and Resumés of Commercial Information issued by the Air Ministry are available. Rather than present to you a mass of figures, I shall attempt to indicate the significance of the various developments which have taken place in aviation and endeavour to assess their future importance. I hope to be able to show you the growth of activity in British aviation compared with other countries, and the extent to which we have participated in the advance in world aviation which has been made since 1932.

To begin with, there has been a significant difference between British and foreign progress: the foreigner expanded rapidly between 1926 and 1930, but his expansion slowed down considerably thereafter; he seems to have spent a lot of money during the boom years operating services on an unremunerative basis, and then to have become discouraged by the slump. During the same period British aviation expanded every year, but more rapidly after the slump. From that I conclude that our policy of developing along sound commercial lines is justifying itself. This is borne out by a report submitted by M. Henri Bouché in 1933 to a special sub-committee of the League of Nations. M. Bouché showed that Imperial Airways had by then gone two-thirds of the way towards financial autonomy and were, therefore, more nearly independent of subsidy than any European organizations with the exception of those of the Netherlands and Finland. Since 1933 we have further improved our position.

I propose to discuss British Civil Aviation under three convenient headings: Internal, European, and Empire.

INTERNAL AIR SERVICES

There has been a remarkable development of unsubsidized air services within the United Kingdom. In 1932 the route mileage of these air services was 187 route miles; by July, 1935, this had increased to 6,593. This expansion can best be shown by the fact that since I last addressed you the route mileage of these services has increased 35 times,

and the number of passengers carried annually has increased by 4,200 per cent, or 43 times.

Prior to 1932 there had been some attempts to operate internal services, but the results obtained were not encouraging. The chief factors which have contributed to the surprising growth of the network of air lines throughout the country are, I think, the increase of air-mindedness on the part of the public, the provision of a number of new aerodromes, and the fact that British aircraft manufacturers have succeeded in producing reliable and economical aircraft especially fitted for use on internal services. The introduction of these new types of aircraft has encouraged the air operator to charge rates not greatly in excess of the ordinary first-class railway fare. The public distrust of aviation as a new form of transport is being broken down partly as a result of the high standard of safety, regularity and comfort shown by our Continental and Empire services, and partly as a result of the work of the various air display organizations which have been touring the country for some years. In addition, efforts have been made by the Air Ministry and by other organizations to encourage local authorities to provide aerodromes, and most of the new air services have been made possible by the fact that the number of municipally owned aerodromes has been trebled in the last five years. Up till 1932, the aerodrome position might be summarized by saying that "there were no aerodromes because there were no air services, and there were no air services because there were no aerodromes." However, the thirteen municipally owned aerodromes in 1932 have now been increased to thirty, and more are under construction.

One feature of the recent development is that the railway companies have become air operators. In 1933 the Great Western Railway, in conjunction with Imperial Airways, ran an experimental service between Cardiff, Haldon, and Plymouth; and in March, 1934, "Railway Air Services" was formed, its capital being held in equal shares by Imperial Airways Ltd. and the four chief railway companies. In addition some railway companies have acquired a financial interest in aircraft operating companies. There has been a marked tendency during the last year for the companies operating internal services either to amalgamate or make some arrangements concerning the joint operation of air services.

The Post Office was quick to appreciate the saving in time effected by internal air services. As a result of the experiments which have been made, the Postmaster-General announced in November 1934, that, whenever suitable terms could be arranged, any regular air service would be used for the carriage of first-class mail matter, that is letters and postcards, if by doing so the delivery of an appreciable amount of

correspondence could be quickened. These internal services are considered as part of the ordinary system of postal communication in this country, and letters do not have to be posted in Air Mail boxes, nor is it necessary to pay an excess fee. Three air services are at present accelerating a considerable amount of first-class mail every day. These are the services between Inverness, Wick, and Orkney; the London to Glasgow service *via* Liverpool and Belfast; and a service between Liverpool and the Isle of Man.

It has been necessary to improve the technique of air transportation. Air transport, like any other form of transport, has to cater for a travelling public which requires safety and regularity. This safety and regularity can only be obtained by the close co-operation between the crew of the aircraft and an elaborate organization on the ground. The provision of such a ground organization has been the special concern of the Air Ministry, and steps have been taken to provide suitable equipment to serve the rapidly expanding network of air lines. In 1932, there were only three wireless stations provided for the use of internal air lines; by 1935, they were increased to eleven; by 1937, it is hoped that provision will have been made for four medium range, three long range, and twelve short range wireless stations, in addition to the facilities which exist at the moment. The extent to which the Government has contributed to the development of these internal services is shown by the fact that last year the expenditure on wireless services alone for the use of internal air lines amounted to approximately five shillings per passenger or over £5 per route mile.

By this organization greater regularity and continuity of operations has been made possible. In the past a sacrifice of safety was the price paid for regularity and continuity of services. In this country that sacrifice was not made, and consequently, with our climate, delays had to be taken as a matter of course. As we could not alter our climate, it appeared that we should have to alter our methods of flying. Aircraft can now take off and fly in conditions which would be impossible without the assistance of wireless. A pilot, while he is in the air, now hears weather reports along his route, together with forecasts and special warnings; in conditions of bad visibility, he requires to know his position, which is given to him by wireless direction-finding apparatus on the ground. In addition, he is in communication with the Control Officer, who warns him if other aircraft are in the vicinity and who issues instructions to avoid the risk of collision. The extent to which the regularity and safety of air services depends on this organization is shown by the fact that, if the year 1933 is compared with 1934, the total number of civil transport aircraft arriving and departing from

London airports increased by approximately 80 per cent., while the increase in the number of radio direction-finding bearings transmitted to these aircraft from the ground was 120 per cent.

However, this wireless organization which has been recently built up does not yet solve the problem of landing with safety in bad weather. To overcome this difficulty, an ultra short wave wireless transmitter has been devised to guide the aircraft down to the aerodrome in conditions of little or no visibility. This radio-assisted landing apparatus is still in an experimental stage.

These developments in solving old problems have in their turn given rise to new problems. It is now necessary to devise some system to prevent collision between aircraft flying on routes and out of sight of each other in conditions of no visibility. This is now being studied very carefully, and a control scheme to enable all aircraft which use the air routes of this country to operate with safety is at present under consideration. In the future, aviation may be able to achieve a degree of regularity unsurpassed by any other form of transport.

From what I have said, it might appear that the internal air services are on their way to establishing themselves in a satisfactory position. I am afraid, however, that this is not the case and, with a few exceptions, it appears that aircraft operators are losing money. While the total number of air services in the period under review has greatly increased, many of these services are seasonal in character, and a number have been entirely unsuccessful from a financial point of view. The selection of unsuitable routes was mainly the cause of failure, but it should be remembered that very few data exist to guide the operator in his choice of a route, more particularly as I am told that a number of air services have created a new class of travelling public. As internal air services have to compete with a network of speedy ground communications, it is not surprising that in the United Kingdom at one time fourteen out of the sixteen companies operated over water. Any air service in this country operating over land, which links two large centres of population, has to face competition from surface transport. At first sight it would appear that an aircraft cruising at 150 miles per hour need not fear competition from an express train travelling at half that speed. The main concern of the traveller, however, is the total time it takes him to go from one centre to another, and this is not the time taken to travel from aerodrome to aerodrome, as these aerodromes are invariably situated some distance from the business centre of the town.

Although an aeroplane may cruise at 150 miles per hour, that is not the average speed of an air journey measured from one town centre to another. For towns 100 miles apart it becomes less than 60 miles per

hour. If the journey is shorter the average speed is lower, and 43 miles an hour is the average speed of British internal air services when measured in this manner. An immense amount of time and money is spent in improving the performance of aircraft. As an example of this it is anticipated that aircraft cruising at 160 miles per hour will operate on the London-Paris route in the near future. If the forty-five minutes at present spent on the journey from Victoria to Croydon could be reduced to fifteen minutes, from the point of view of time saved, it would be equivalent to increasing the cruising speed of the aircraft from 160 to 260 m.p.h.

The future of internal flying seems to depend on what the operator can offer the travelling public. In making any offer the aircraft operator is faced with two alternatives—he can either enter into competition with surface transport in the traffic routes of this country which link the main centres of population, or he can operate services on routes where good surface communications are lacking. Presumably, the main traffic routes are there because they are wanted, and if they are not somewhere else, it is because the demand is lacking. Along the main routes there may be a number of people willing to pay for a saving of time, but in competition with existing transport the aircraft operator has little saving to offer. On other routes where greater saving of time is possible there will be fewer people willing to buy it. For such varied means of communication as trains and telegraph services the demand is seasonal. In the case of air services this seasonal demand is very marked, and there is a wide margin between the traffic offering in winter and in summer. During peak periods the aircraft operator may be compelled to employ extra equipment which he is unable to use at its most economical intensity for the rest of the year.

I should be the last to wish to appear pessimistic about the future of these internal services. It may be that the aircraft will be able to build up a special class of long distance traffic. While this traffic is being built up the chief problem which the operator has to face is that along certain routes there may be a demand for a saving of time where there is only a small saving to offer. On other routes where there is a large saving to sell, only a small demand may exist. At the moment the whole question of the future development of internal airways is being considered by a committee set up by the Secretary of State for Air under the chairmanship of Sir Henry Maybury.

PRIVATE FLYING

Turning from commercial to private flying, the number of pilots obtaining licences has shown a steady increase. Over 2,397 pilots

held "A" licences in 1932, and this figure was increased to 3,353 in 1935. During the period the number of clubs receiving subsidy increased from fifteen to forty-one, and there are now forty-nine.

The most important aviation contest yet organized was the air race from England to Australia for prizes offered by Sir McPherson Robertson in connection with the Melbourne Centenary Celebrations. Of the sixty-four competitors entered from all over the world, some twenty started from Mildenhall Aerodrome on the 20th October, 1934, and out of these nine completed the course. Scott and Campbell Black flew the 11,300 miles from Mildenhall to Melbourne in approximately seventy-one hours. For this performance Great Britain gained the first international "capital to capital" record granted by the Federation Aeronautique Internationale. The handicap race was won by Parmentier and Moll, flying a Douglas aircraft entered by K.L.M.

In 1933, a Committee under the Chairmanship of Lord Gorell was set up to examine the requirements of the Air Navigation Regulations at that time in force, with particular reference to those governing private flying in such matters as Certificates of Airworthiness, also to consider whether and in what respects the existing system of control by the Air Ministry should be modified by way of devolution or otherwise, and to examine the question of establishing a system of third-party insurance. The Report of this Committee covered a wide field, but I will only attempt to deal with one or two of the more important items. Subject to certain provisions, the Air Ministry has approved the recommendations concerning airworthiness. A scheme for devolution on the general lines recommended has been prepared by the civil aviation interests mainly concerned, at the invitation of the Secretary of State, and their scheme is now under joint consideration between their representative Committee and the Air Ministry. Provisional arrangements are well forward, and the enabling authority for setting up the proposed Board will be obtained under one of the clauses of the Air Navigation Bill now before Parliament. Similarly, as regards third-party insurance, the Air Ministry has prepared a scheme in consultation with other Departments of State and with outside bodies. This scheme is now embodied in the Air Navigation Bill. An important result of the work of the Gorell Committee will be that, subject to regulations regarding compulsory third-party insurance, Certificates of Airworthiness will be optional for private aircraft.

In order to encourage the Gliding Movement, it was decided in 1934 to provide financial assistance to the extent of £5,000 per annum for five years. In the first few years this sum will be devoted to the provision of equipment for certain approved clubs already in being, with a

view to assisting them to establish themselves on a sound basis. In selecting clubs attention has been paid to their geographical distribution. The British Gliding Association has prepared a scheme for this purpose, which has been approved by the Air Ministry. Expenditure will be controlled by a Board of Trustees under the Chairmanship of Colonel Moore-Brabazon. Later on, it is hoped that it will be possible to found a Central School with facilities for research work, study of meteorology, etc.

CONTINENTAL FLYING

Following the growth of unsubsidized flying in this country since 1932, there has been a remarkable development in the number of unsubsidized services operating across the Channel. The exact extent of this increase is difficult to judge with complete accuracy, as the companies concerned are under no obligation to supply the Air Ministry with statistics of their services. It appears, however, that since 1933 this traffic has been trebled, and during the peak period of 1935 over 2,000 route miles were being operated. These unsubsidized services operate to France and Belgium, and an additional service to Lisbon is now under consideration.

Imperial Airways have also extended their Continental services. Last year they opened a service operating through Central Europe as far as Budapest. As you are no doubt aware, this Company under its agreement with Government enjoys a monopoly of subsidy in regard to European services. They have, however, agreed to waive their contractual rights in this respect in the case of services North of a line from London to Berlin. This has enabled the Air Ministry to place a contract with British Airways Ltd. for the operation of a subsidized service to Scandinavia. A service by day was recently inaugurated and will be followed in a short time by a night service. On these services British Airways will, by arrangement with the General Post Office, carry first-class mail matter without surcharge as in the case of the internal services to which I referred earlier. Similarly, in the near future, Imperial Airways will inaugurate, in conjunction with the Deutsche Luft Hansa, a night air mail service to Berlin. These services will be the first to carry mail by air to the Continent without surcharge, and the time is fast approaching when air mail labels, special pillar boxes, in fact the surcharge system as a whole, will disappear.

EMPIRE SERVICES

As far as British aviation in the Empire is concerned, I propose to confine my remarks principally to the services which link England with the Dominions and the Colonies. Since I last addressed you, many

changes have taken place. At the beginning of 1933, the service across the Mediterranean was altered, and the route is now Brindisi, Athens and Alexandria. Since April 1935, Imperial Airways have operated in addition a bi-weekly service with landplanes direct from London to Brindisi *via* Paris and Marseilles. This service is for mails only, and connects outwards at Brindisi with one service to Australia and another to the Cape.

In July of 1933 the service to India was extended from Karachi to Calcutta *via* Delhi, and operated by Imperial Airways in conjunction with Indian Trans-Continental Airways. Two months later, the service was extended to Rangoon, and by December, 1933, the terminal was at Singapore. A year later the first regular service from London to Australia was inaugurated, the Singapore and Brisbane link being operated by Qantas Empire Airways. The frequency of these services has been increased, and from the beginning of last year it was necessary to duplicate the service from London to Calcutta, and by September, 1935, the duplicated service was extended to Singapore and there is now a twice weekly service through to Brisbane.

On the South African route, the developments during the period under review have been less spectacular, as the first through service to the Cape was commenced at the beginning of 1932. By the end of 1934 the service from England to Johannesburg had been duplicated.

There have also been important developments in services feeding these main trunk routes, and the route mileage of such services operated by British companies has increased from 4,300 miles to 9,600 miles in the last four years. Further developments in these feeder services are contemplated. Imperial Airways will operate services from Khartoum to Lagos, and the first step in this project is an interim service which commenced this year carrying mails from Khartoum to Kano. An extension to Lagos, Accra and Takoradi will be undertaken by an associated company when the ground organization is complete.

A large civil air base is being constructed at Bermuda, and a flying boat service operated by Imperial Airways, in conjunction with Pan-American Airways, will shortly be established between Bermuda and New York.

At the end of last year a series of experimental flights were made by Imperial Airways between Penang and Hong Kong. A regular service on this route is now in operation.

With the expansion of these Empire traffic services, with a corresponding decrease in the journey time and an increase in frequency of service, it is most satisfactory to note that there has been a remarkable

increase in the amount of traffic handled during the last four years. The traffic has doubled itself, but perhaps the most notable increase is shown when 1934 is compared with 1935. The number of miles flown by Imperial Airways on all regular services increased by 76 per cent., and the total passenger miles flown by 38 per cent. The fundamental unit of comparison used in air transport is ton-miles, because it happens to be a convenient index of weight and distance. The important thing from the operator's point of view is not so much what tonnage he handles, but how far it is carried. In the case of Imperial Airways, there has been an increase of 51 per cent., if the total ton-mileage, including passengers, mail and freight, of 1934 is compared with 1935. It is interesting to note that, while the ton-mileage of passengers and freight rose by 38 per cent. and 47 per cent. respectively, the ton-mileage of mails carried increased by over 96 per cent. This increase is, I think, due to the fact that the air mail rates have been lowered and simplified. In November, 1934, a flat rate for air postage of 6d. per $\frac{1}{2}$ oz. for letters to the many distant parts of the Empire, except Australia, was introduced. At the same time, the rate of 3d. per $\frac{1}{2}$ oz. was charged for letters to the Near East.

As I have said, the success in the development of an air line is nearly always the result of close co-operation between the air and ground organization. As a result of this, it is an almost invariable rule that an internal air line operating over its own territory, providing the distances are sufficient for it to effect a real saving of time, will always prove more successful from a commercial point of view during the development stages than an air line which has external services running across the territory of other countries. In addition, operational difficulties are increased when the air line personnel has to be strung out over long distances, and fuel and supplies have to be transported to inaccessible regions. Therefore, every country with external air services of any importance has provided a subsidy. While the methods of giving this subsidy are varied, the principle behind them is to speed up the development of aviation.

The success of our Empire services is a remarkable proof of the wisdom of our subsidy policy. In my last lecture I mentioned that subsidies had been given to Imperial Airways with a view to speeding up progress and to place air transport on a self-supporting basis at an early date. In view of the preliminary development work which has had to be done, and in order to hasten that work, subsidies were given on a scale designed to make up the difference between the revenue and expenditure of the operating company and allow it to pay a reasonable return on its capital. On all routes operated by Imperial Airways,

there has been a steady decrease in subsidies paid as the amount of traffic has increased. To illustrate this, the contribution made by the tax-payer for every ton-mile flown on European services was 7s. 2d. in 1925. By 1934 this amount had been reduced to 2s. 1d. The service eastward of Egypt cost the tax-payer 24s. per ton-mile in 1928, and in 1932 this cost was reduced to 6s. 4d. In 1932 the African service cost 11s. 8d. per ton-mile, but in 1934 only 3s. 11d.

It is difficult to make any comparison between our external services and those operated by other nations, because the conditions of operation are so entirely different; nor can one compare, as some have tried to do, the services of Imperial Airways, which operate across four continents and serve twenty-four countries, with, say, the United States Trans-Continental Airways. A more logical comparison would perhaps be with the United States external services operated by Pan-American Airways, which flies through a number of different countries in America, but even here a close comparison breaks down, because the demands of the consumer are different in both cases. Last year Pan-American Airways carried nearly double as many passengers as Imperial Airways, but in the same year Imperial Airways carried nearly three times as many tons of air mail in and out of this country compared with Pan-American Airways' operations in and out of the United States.

It may fairly be asked whether the present rate of development on the Empire services will continue. The answer to this is obviously dependent on the extent to which air services will be able to show a saving of time over other means of transport, whether a demand exists for this saving of time, and whether the consumer is able to pay for it at the rates which are offered. If you travel by air from London to Cape Town at present, your overall speed by air journey is nearly 40 miles an hour compared with 19 miles an hour by boat, and you effect a 100 per cent. saving of time. The extra cost is about £5 10s. per day saved. On the journey from London to Singapore, the average overall speed by aeroplane is over 40 miles an hour; by boat it is about 13 miles an hour. A saving of approximately 220 per cent. is thus effected; the extra cost of air travel is about £3 15s. for every day saved. The fact that it takes eighteen days by boat to travel from London to Cape Town may make it impossible for a number of people to go there. If the journey time is reduced by half there may well be a greater demand. But what that demand is likely to be one cannot say unless one is prepared to draw a demand curve for preferences which may exist in the minds of the travelling public. Attempts to do this in the past have not been conspicuously successful.

I give these examples to show how difficult it is to forecast the

ultimate demand for air travel. However, it is possible to give some idea of the facilities which will be provided in the near future. You are doubtless already familiar with the proposals for the further development of Empire air communications which were made by the Under-Secretary of State for Air in the House of Commons on the 20th December, 1934. Under this Empire Air Mail Scheme it is proposed to carry all first-class mail by air to those parts of the Empire which are situated on the main air routes at a letter rate of 1½d. per ½ oz. To accomplish these far-reaching developments, it will be necessary for Imperial Airways to increase their fleet very largely. It will also be necessary to extend the ground organization on the routes. With this new equipment it is hoped to reduce considerably the present time-tables and to increase the frequency of service. Negotiations have been proceeding with the Governments concerned and proposals have been made for the services to be operated by flying boats and landplanes. All services will be operated *via* Egypt. On the route to Australia one service will terminate at Singapore, and two services will, we hope, go right through. On the South African route, one service will terminate at Kisumu, and two services will go through to Durban. These will be operated with flying boats. In addition, there will be three landplane services per week to Egypt, of which two will continue to Calcutta. As soon as possible, New Zealand will be brought into the scheme with an air service across the Tasman Sea.

An order for twenty-nine flying boats has been placed by Imperial Airways with Messrs. Short Brothers of Rochester. These are already under construction, and are high-wing monoplanes of metal construction powered with four engines, each developing about 800 h.p. Their all-up weight is approximately 17½ tons. Cruising at about 150 m.p.h., their commercial payload will be 3½ to 5 tons according to the amount of fuel carried. These boats will have seating accommodation for 24 passengers by day and sleeping berths for 16 by night. The standard of comfort for these aircraft is expected to be a definite advance on that of any existing types.

Twelve all-metal landplanes have been ordered from Messrs. Armstrong Whitworth Aircraft Limited. They are high wing four-engined monoplanes with a loaded weight of 20 tons and a commercial payload of approximately 4 tons, cruising at about 150 m.p.h. These aircraft will have comfortable accommodation for 27 passengers by day, and 20 sleeping berths by night.

It will be noted that the majority of these proposed services will be operated by flying boats. This will ensure greater safety of operation on the large expanses of water which have to be flown over on the

Empire Routes. There are a number of reasons why flying boats are especially suitable for Imperial Air Mail Communications. One important factor is the considerable saving which will be effected by the use of water as an alighting area. Owing to the varied and difficult climatic conditions on these routes a considerable expenditure would have been necessary for the construction and the maintenance of all-weather aerodromes, capable of being used under all conditions by aircraft carrying the loads envisaged under this scheme. A substantial reduction in fuel costs is obtained when petrol can be trans-shipped by water to the refuelling points on the route.

When the Empire Routes were first established, a stage of technical development in aircraft manufacture had been reached which made it necessary to employ various types of aircraft specially constructed to meet the difficult conditions prevailing on various parts of the routes. The services were, therefore, sub-divided into a number of sections each operated by different types of aircraft. Thus a number of operating and overhaul bases were established far away from convenient sources of supply where living conditions for the staff employed were often difficult. The development of more economical and reliable aircraft will enable a fleet of uniform types to operate from a base in the United Kingdom. It is probable that considerable operating economies may be effected by dispensing with stages and by flying the same aircraft throughout the whole length of the route.

At present it is not possible to state when the Empire Air Mail Scheme will become fully operative, but it is hoped that the initial services will be in operation by 1937.

FUTURE DEVELOPMENTS

Looking now to the future, the most important development envisaged is the establishment of air services across the North Atlantic. With this object in view, negotiations have recently taken place between representatives of His Majesty's Government in the United Kingdom, the Irish Free State, Newfoundland, Canada, and of the Government of the United States. As a result of these negotiations understandings have been reached which it is hoped will bring about the early establishment of Transatlantic air services connecting these several countries. These understandings are based upon the principle of full reciprocity between the countries-concerned. Operation will be undertaken jointly by a British Commonwealth operating company and a United States operating company.

Although it is recognized that the Northern route, *via* the Irish Free State, Newfoundland and Canada, is shorter than the Southern

route, and will therefore have the advantage of more economical operation, this fact does not preclude the possibility of considerable use being made of the Southern route.

The establishment of these services will forge the last main link in the chain of Empire air communications, though it will not be possible, at any rate for some years to come, to apply the principle of carrying all first-class mail by air. Having in view the fact that on either route a stage of approximately 2,000 miles is involved, it would obviously at present be impossible to provide the capacity required for the whole of the mail. Little practical experience is available of flying conditions on these routes, climatic conditions being responsible for a number of difficult problems, and the first services will be of an experimental nature. We expect to carry out experimental flights during the summer of this year, and we look forward to scheduled services not later than 1938 on a basis of four round trips per week.

There are three types of aircraft under development in this country which are believed to be capable of operating services. During summer conditions, experimental flights could be made by Short flying boats of the type it is proposed to use on Empire Air Services, but modified to give a greater range. Two high speed landplanes are on order which are capable of operating the service during the summer under all conditions, and possibly even during the winter. In addition the Air Ministry have given financial assistance to Imperial Airways for the development of the Mayo composite aircraft. This is a combination of two aircraft and involves the development of a new technique which will shorten the take-off normally required for heavily loaded aircraft, and may enable a greater payload to be carried out at a lower power output than is at present possible with orthodox aircraft.

To what does the progress that I have outlined point in the future? As I have described it, without elaboration, it may sound as if we had plodded along in a rather unspectacular way. That is, I think, what we have done, and some of the best work in the world has been done that way. We cannot expect to see the progress of civil aviation recorded daily in headlines in the Press. Nevertheless, we are, I think, preparing at this moment for a very striking advance in air transportation both at home and in the Empire. We are laying down the ground organization to enable our services to fly both by day and by night. This is equivalent to a great increase in speed. It will eventually bring Australia within seven days, South Africa within four days, and India within three days of London. It will enable our services at home to fly both winter and summer, thus decreasing the overhead costs of air transportation and securing that continuity of services without which

passengers will not acquire the habit of air travel. New equipment is now being tested to overcome the last remaining difficulty that prevents flying in bad weather. We can already fly in conditions of low visibility, and when we can land in those conditions the principal reason for cancelling services will no longer exist. Regularity, another essential to the air passenger, will have been achieved.

The important replacements that will shortly take place in the fleets of our leading operating companies will give us higher cruising speeds without increase of operating costs. This will make possible more frequent services, more ton-miles carried per year. The carrying capacity of the aircraft is greater, and this contributes to lower costs per unit carried. All this is to be achieved with an increase, not a sacrifice of the security, for which we have already become famous. When we have done this we shall have achieved an important step towards the goal of air transportation: fast, frequent, and regular services in safety, day and night, in all weathers and at a price that the public can afford to pay.

DISCUSSION

WING COMMANDER F. H. M. MAYNARD: Could the Lecturer give us some idea of the comparative cost of the flying boat and the land machine when carrying the same load?

ADMIRAL THE EARL OF CORK AND ORRERY: The Lecturer told us about an agreement made with Pan-American Airways, and also about the coming institution of a trans-Atlantic service, in which I understood that we were to have reciprocal treatment from the United States. Will it then be possible for our aeroplanes to fly from Canada down the coast of the United States to the West Indies, or shall we see, as we see now, British colonies in the West Indies entirely served by American aircraft? In an official capacity I had to fly down to Trinidad to call on the Governor there, and the Amphibian in which I travelled had to be hauled up in a shed flying the American flag in a British colony. If the Governor of Jamaica wishes to visit other of the West Indian Islands he has to fly in an American plane. I hope the Lecturer will be able to say that, in the near future, we shall have British aircraft supplying our colonies with the service which they require. At present the West Indies look upon the United States as *the* flying nation. We were able to put up a fair display from the Fleet while we were out there—we had one aircraft carrier with us; I was told by a lady resident that that was the first time they had seen British aeroplanes, in any number at all, flying over Port of Spain. The United States have a close service on their coast for steamers; is that going to be extended to aircraft, or are we going to be allowed to fly down the coast and visit various ports in the United States and go on to the West Indies?

I should also like to ask whether Imperial Airways is purely a commercial company. Does it start services only where they are likely to pay, or does the Government say, for instance: "For Empire development we should like a route here, and we will subsidize you so that you shall not lose by it"?

LIEUTENANT-COLONEL K. N. CRAWFORD: Will the Lecturer tell us what is the present situation with regard to lighter-than-air craft? Is there any prospect of

our going in again for airships? I should also like to know how foreign airships are running as regards cost as compared with the aeroplane.

CAPTAIN E. ALTHAM, R.N.: We had a lecture here some little time ago on seadromes; are they regarded as outside the range of practical utility or as unnecessary owing to the increased range of aircraft?

MR. NIGEL TANGYE: Could the Lecturer tell us anything about recent developments with regard to refuelling in the air?

COMMANDER H. S. MURRAY-SMITH, R.N.: Is there any idea still of making aerodromes on the roofs of railway stations, where they will be in the centres of towns instead of in the country districts?

THE LECTURER

With regard to the relative cost of flying boats and land machines, I have not got the information with me, but if the gentleman who asked the question will give me his name I will see if I can let him have the information he requires.

With reference to the question of reciprocity on the trans-Atlantic route, that is being dealt with on an *ad hoc* basis, that is to say, we shall get reciprocity by being allowed to use a terminal port in the United States in return for giving permission for the use of a terminal in this country. I think we all fully realize how desirable it would be to give the West Indies a service, and our efforts will certainly be directed towards that end, but a West Indian service is obviously a much cheaper proposition for Pan-American Airways, who are practically on the spot, than it would be for a British company, and the West Indian Governments have always pressed for Pan-American Airways to be given the fullest facilities. I certainly wish that, in giving the facilities, those Governments had stipulated for reciprocal facilities if and when they were required, but I see no reason why in future, when we have got the trans-Atlantic routes established, we should not have a service *via* Bermuda to our own West Indian colonies, and I think we shall look forward to establishing that.

As regards airships, although I am not directly concerned at the present time, I think I am right in saying that the policy of the Government is not to proceed at present with further airship construction.¹

I should not like to say that seadromes are not a practical proposition, but I think the general consensus of opinion is that with the advance of technique they are no longer essential, and their enormous cost must also be borne in mind.

I am afraid I have not anything to report with regard to refuelling in the air because our latest experiments have only just recently been put in hand. That again is one of the means of obtaining what may be called artificial acceleration. We are experimenting with refuelling in the air, and we are also experimenting with catapulting. When I was in the United States recently I gathered that opinion was not very much in favour of refuelling in the air, as it was considered to be only a fair-weather proposition.

We have heard nothing recently about any projects for putting aerodromes on railway stations. Such projects have been put up to us, but, when we suggest a certain amount of experimentation to find out what the effect of flying off those elevated aerodromes would be, the protagonists of the schemes usually retire, and

¹ On 1st July, Sir Philip Sassoon—Under Secretary for Air—stated that the Government were considering the question of airships, and as soon as they thought that airships had proved themselves as a useful and essential instrument they would certainly embark on them again.—EDITOR.

we do not hear any more about them. Speaking entirely for myself, I very much doubt whether such projects are feasible, at any rate in the near future.

Imperial Airways enjoy complete commercial freedom. The routes which they operate under contract with the Government, and for which they receive subsidies, are naturally selected by the Government, details being worked out between the company, the Air Ministry and the General Post Office, together with the other countries concerned. Close contact is maintained between Imperial Airways and the Air Ministry on all matters connected with these services.

THE CHAIRMAN

The Chairman having left earlier, Vice-Admiral B. W. M. Fairbairn, C.B.E., took the chair during the Discussion and proposed the vote of thanks to the Lecturer which was carried by acclamation.

AIR DEFENCE OF OUR SEA COMMUNICATIONS

By "SECURUS"

NO people in the world depend so utterly on sea communications as do the people of the British Commonwealth of Nations; yet to-day there are strong, potentially hostile air forces so situated as to be capable of attacking almost every one of the British ports or naval bases upon the security of which we rely to control those communications in time of war. It is the purpose of this paper to consider how seriously national security is threatened by this new factor and to suggest a method of meeting it; but in order to make clear how the advent of aircraft has affected the problem, a brief examination of how sea communications were secured in the past, and some description of purely naval methods of exercising control in war is necessary. The first part of this article, therefore, deals with much that is already common knowledge to many.

For many generations the insular position of Great Britain and the possession of a great fleet gave unique security to her people and to the Empire generally; so long as she was able to control the sea communications she could not be invaded, nor could the flow of her merchant ships upon which her food and raw material supplies depend be seriously interrupted. For generations the British Navy, in war, has controlled the sea communications of the world without serious challenge, because it was clearly recognized that a great preponderance of fighting ships was our chief imperial defensive need. A navy exercises control of sea communications by defeating the enemy's main fleet in battle or neutralizing it by threat of battle if it takes the sea, when his cruising vessels may be destroyed wherever they try to operate. This denial to an enemy of the use of the sea ways has hitherto also deprived him of the power of invasion: he could not move the necessary ships in security.

INFLUENCE OF THE SUBMARINE.

A new factor in the control of sea communications appeared with the production of the submarine. The ability of this craft to conceal itself under water enables it to elude battle except on its own terms;

it was, therefore, an effective challenge to the age-old paramountcy of the predominant surface fleet, and new forms of counter-attack had to be devised to protect both surface warships and merchant vessels. In spite of our vast surface predominance, no more than thirty enemy submarines at large at any one time very nearly proved fatal to us in the Great War, so successfully did they dispute control of the sea communications.

An examination of the campaign waged against the submarine and of the methods which eventually overcame this menace indicates that, owing to its limitations of speed and vision, the submarine only functioned successfully when attacking trade in narrow waters and in focal areas where the sea roads meet and where many ships must pass. Even to-day the position is not greatly different. The majority of submarines constructed at present are small, and are not designed to operate at great distances or for long periods away from their bases. A few submersible raiders of between 2,000 and 3,000 tons have been constructed. These, of course, are able to keep at sea for limited periods at long distances from their bases, if they can be assured of the necessary supplies. Owing, however, to inherent limitations, i.e., the length of time they take on passage, the necessity for revictualling, refuelling and repair, and rest for their crews, a considerable number of submarines will have to be maintained to allow for a few to be on patrol simultaneously at distances of more than a thousand miles from their bases. Moreover, the effect of their operations is necessarily less productive because there will be far less shipping at any given locality on a single ocean trade route than in an area where several sea routes meet. An immense effort will, therefore, be necessary if submersible raiders are to be operated in the wide oceans with any expectation of obtaining a success equivalent to that which smaller vessels have shown themselves able to gain in narrow waters and focal areas. Doubtless, if conditions can be made too difficult for submarines where shipping is most dense, the larger boats will be sent to the open seas; but this will be a confession of failure of the submarine campaign against trade as a whole; and the menace, from the point of view of the defences, will have ceased to be a vital one and will have been reduced to the category of spasmodic raiding.

AIRCRAFT AND SUBMARINES.

The object of the anti-submarine campaign in the late war was to find and destroy submarines in their bases and in the narrow waters, and to deter them from attacking ships in convoy. Large numbers of fast, small craft, mine-fields, submarine nets, and operations such as

those at Zeebrugge on St. George's Day, 1918, were all necessary in the difficult task of finding and destroying submarines or making their bases untenable. Aircraft proved the greatest assistance: they were able to search large areas quickly, to locate submarines—sometimes even when submerged, to direct co-operating flotillas to the position where submarines had been sighted, and to attack them and their bases directly with bombs. Their moral effect upon the submarine commanders was such that it greatly circumscribed their freedom of action. It was found, too, that when aircraft were used to escort convoys through the narrow waters, submarines very rarely attacked, and that reconnaissance carried out by aircraft in co-operation with anti-submarine flotillas was of the greatest value in ridding us of this menace to our sea communications. Our heavy ships provided cover for the flotillas, but in themselves could do nothing to control the submarine.

AIRCRAFT AND BASES.

Naval forces cannot remain permanently at sea; they require bases from which to operate and to which they can return for refuelling and repair so sited with reference to possible enemy naval bases that a hostile fleet cannot come out and dispute control without being brought to battle. Our vast possessions have compelled us to establish naval bases throughout the world; indeed, one of the most important results of the majority of our wars has been the cession to us of such bases, or of sites for them which we required ourselves or which we did not want another nation to possess.

Yet the mere possession of naval bases is not sufficient. They must be so secure that ships based upon them can rest, refuel, and be repaired there in safety. In the past, the security of naval bases rested chiefly upon the naval forces that were or could be based upon them; to a lesser extent, upon their freedom, owing to geographical situation, from land attack; and, finally, upon fortifications equipped with heavy artillery and a garrison of troops. But once a base became subject to bombardment from land artillery, no fleet could continue to use it because the auxiliary craft, repair facilities, fuel and other supplies essential to its existence, were too vulnerable. What then of bombardment by aircraft? It is now surely beyond dispute that modern aircraft bombs can seriously damage ships of the most heavily armoured class and sink all others without which the heavy ships cannot operate; moreover, those shore establishments, fuel supplies, and dockyard facilities which are so essential to the ships, are most vulnerable. It is also well established that there is no certain defence

against attacks by aircraft, but that some, and probably a high proportion, will always get through purely local defences. If, therefore, aircraft can reach bases in any numbers they can render them insecure. At present the ranges of aircraft are limited, and thus ships may be able to withdraw from certain ports or bases which are too close to the enemy country to others out of range of air bombardment. But, if this course is resorted to, the capability of warships to control the sea communications by bringing the enemy to battle will become less and less as the distance between the opposing bases increases. In fact, the distance that opposing bases can be separated from each other and yet permit a naval force based on one to intercept an enemy based upon the other, is a product of the speeds of the respective fleets, and within reasonable limits this seems fixed for the present, and for some time to come, at somewhere between 300 and 400 miles. The ranges of modern aircraft are already greater than this, and they are constantly increasing. Aircraft are likely, therefore, to be able to reach the majority of such naval bases and ports.

PRESENT POSITION OF BRITISH PORTS AND BASES.

Having established that the security of bases is definitely weakened if they are within range of hostile air forces, let us examine the more important British naval bases in order to discover in general terms what weight of air attack might be brought against them and what can be done to meet this threat.

It is beyond argument that strong potential air forces could even now operate over all the vital narrow waters which surround our coasts and along some portions of the most important of our sea routes. Not only are our home naval bases affected, but all our main sea ports which must handle our supplies of food and raw materials. Not one of the naval bases or sea ports on the East, South, or West coasts of England is secure from serious attack by shore-based aircraft from the continent of Europe, and every year the potential weight of attack increases.

Turning to the sea routes, perhaps the most important to the British Empire is that which passes through the Mediterranean. During the past year a situation developed in that sea which called for the movement of the British fleet from its principal Mediterranean base: there has been some discussion in the Press and elsewhere as to whether this move was dictated by strategical or defensive considerations—one view holds that it was necessary for strategical reasons in order to secure Egypt and the Suez Canal; another claims that the threat of air attack had rendered Malta untenable. In either event, it is obvious that Malta

is within range of a very heavy scale of potential enemy air attack, and that owing to geographical and topographical considerations no arrangements can be made to provide there an air defence organization capable of guaranteeing the degree of security necessary for an important naval base. Moreover, it also seems true to claim that, in order to apply pressure upon Italy and to secure Egypt, a fleet based securely athwart communications between Italy and Libya, and thus in a position to intercept any sea-borne attack developing against Egypt, would be better placed in the central rather than the Eastern Mediterranean. To this strategical fact can be ascribed the great value which in the past has been placed upon Malta as a vital naval base. The fact that it is now within range of potential enemy attack on a large scale must have fundamentally weakened its position.

Gibraltar, Alexandria, Haifa, and even Cyprus are all within range of varying, but still serious, scales of air attack from potentially hostile Powers.¹ At Gibraltar and Malta, geographical and topographical considerations deny to us the opportunity of ever being able to maintain or concentrate air forces for defence purposes on equal terms with neighbouring potential enemies, nor could we reinforce them so quickly or so easily. The advantages of interior lines and space for dispersal and multiplication of aerodromes are inexorably denied to us.

Further East, the possession of Eritrea and now Abyssinia by Italy, places Aden also within the category of seriously threatened bases. The situation in the Indian Ocean and South Africa is less serious, but in the Far East, we find that Hong Kong—the headquarters and chief base of our naval forces in Chinese waters, is less than four hundred miles from Japanese air bases in Formosa. It is easy to see that Japan could obtain air predominance in that area should she so desire.

Up till now only shore-based air forces already established have been considered, as at present these alone are a really serious threat. It is clear, however, that ship-borne aircraft could attack Singapore and the Indian ports, to say nothing of ports in South, West, and East Africa. But, owing to the limitations inherent in such attacks, except perhaps on Singapore, they can, probably, be relegated for defence purposes to the class of spasmodic raiding.

AIRCRAFT AND INVASION

These offensive qualities of aircraft, which so seriously threaten naval bases within their range, are not, however, all harmful to an

¹ See Gold Medal Essay (Air), 1935, in the *JOURNAL* of May, 1936, and Map facing p. 444 thereof.—EDITOR.

island Power which has hitherto depended upon fleets for protection against invasion. If aircraft can damage ships in bases, they can also find and damage them upon the high seas when raiding operations are being undertaken or invasion is being attempted by means of sea-borne expeditions. Their mobility, range, and striking power combine to act as a most potent deterrent for operations of this kind. Such expeditions require a high degree of security from attack while on passage, and the element of surprise as to place of landing is essential for success. In fact it is no longer possible for a successful landing to be made in the face of enemy opposition unless a considerable degree of air predominance is enjoyed by the attacking Power and the defending air force is destroyed or neutralized at the decisive place for the decisive time. A fleet, therefore, is now less vital as a deterrent to invasion than it was prior to the invention of aircraft.

AIR DEFENCE ORGANIZATION

It seems evident therefore that, given sufficient numbers and sufficient determination in the policy and handling of aircraft, they are certain in war, apart altogether from their power to sink shipping, to be a vital factor in the struggle for control of sea communications. Our own aircraft will also be able directly to attack enemy ports, submarine bases, and even factories; in consequence, they should be able greatly to mitigate the effects of any future submarine campaign. They will also provide an excellent deterrent against invasion by sea, and the only deterrent against air raids. On the one hand aircraft have gravely weakened the ability of surface vessels to exercise control by denying to them, to a greater or lesser degree, the essential security of their bases, while on the other hand they have provided a most effective deterrent against invasion and a potent weapon with which to counter a submarine threat.

Potential enemy air forces now threaten the security of naval and sea ports which are vital to us. If, therefore, the flow of our seaborne supplies is not to be stopped, means must be found to neutralize this danger, otherwise our national life in war could not go on and no attempt could be made to carry the war into the enemy's country. How is this to be done?

It is abundantly clear that the first essential is the provision and maintenance of adequate air forces. The next consideration is how the forces are to be organized and controlled. There are two main schools of thought in this matter, one which considers that the Navy, because it has always been the Service upon which we have relied for the security of our overseas trade and communications, should naturally

now be provided with the means to neutralize attacks from the air upon this trade. This would take the form of such a force as the Royal Naval Air Service, which developed rapidly during the Great War, or a great extension of the present Fleet Air Arm. The other school of thought considers that it would be manifestly uneconomical, if not impracticable, to divide the function of air defence of the Empire into two watertight compartments—one responsible for the defence of the home country and the Overseas Dominions against air bombardment, and the other responsible for the protection of overseas trade, ports, and bases against the same threat. This latter school favours the idea of a single air force with centralized control. Perhaps a reasonable solution will emerge if we examine the problem of air defence in rather more detail.

Few dispute that air attack on this country from Europe will be chiefly by shore-based aircraft, and that naval vessels and carriers are unlikely seriously to enter into it; the sea will only be a factor in complicating the question of observation and interception. The best method of neutralizing it may be by air attack of the enemy's air force and its organization; or of his land or sea force organization, or of some vital factor of his economic life; alternatively, it may be by passive defence by fighter aircraft, A/A guns, and balloon barrages. Probably a combination of one or more of these methods will be called for. Whatever the solution, it is clear that, if the air defence policy selected by the Government is successful and the hostile air attack neutralized, air security will automatically be provided for the essential ports and bases of the United Kingdom. Overseas ports and bases which may also be threatened with hostile air attack are not, of course, directly protected by the provision of a large central air force in the United Kingdom, though they will probably obtain some degree of protection by the very fact of its existence. Without efficiently organized Empire air routes by which squadrons could move rapidly from one part of the Empire to the other, and efficient air bases available at suitable localities, it would be most difficult to provide air security for any particular port or base when it was required. But the very fact that air forces can move so quickly, provided they have the necessary ground facilities at suitable intervals, makes it possible to station the minimum number of aircraft in peacetime for the close defence of any particular locality. It may well be, too, that air security in a certain area will best be obtained by a strenuous air offensive in another. It is well known that for reasons which it is not necessary to go into here aircraft borne in ships or in carriers must of necessity be of lesser performance in the air than those which operate from shore bases. They are also not capable of being reinforced either in such numbers or so quickly because the ships which operate them are specialized vessels which take time

to produce and which cannot, therefore, rapidly be replaced ; moreover, they are much more vulnerable to all forms of attack than land aerodromes. Shipborne aircraft therefore suffer from a considerable inferiority when attempting to operate against shore-based air forces.

It seems clear, therefore, that a distinction can be made between the functions of aircraft which are required peculiarly for the use of fleets when seeking a naval engagement at sea or engaged in searching for raiders at sea, and aircraft required to guarantee air security, not only that sea communications may be effectively controlled, but also for the possibly more vital purpose of providing security for the threatened country as a whole. For this latter purpose, whether aircraft operate from aerodromes, from composite aircraft, from airships, or from carriers, they are in reality operating in an air campaign the result of which will either provide the necessary security for the functions of national life to go on or else may permit a condition of creeping paralysis of that life to set in. It is surely both economical and reasonable that this force should have one control ; one head ; one administration ; and one aim. A suitable organization to provide security against air attack for the Empire as a whole, including shipping in narrow waters, ports and bases, would seem to consist therefore of the following elements :—

- (a) A centrally controlled, equipped and trained air striking and air fighting force, the primary function of which is the gaining and maintaining of air security. A second function would be the provision of air contingents for the land or sea forces.
- (b) An air route organization to enable the central air force or detachments of it to reinforce threatened portions of the Empire, and our overseas ports and bases.
- (c) Overseas air forces located at important strategic positions, ports and bases as a deterrent to raid or attack, and as a nucleus on which rapidly to build a strong air organization in emergency.
- (d) Detachments specially trained and permanently maintained for Army and Fleet co-operation.

An organization of this kind would provide a flexible weapon capable of (i) securing the Empire against air attack, if this function at any time is the most vital ; (ii) providing an immense deterrent to invasion and over-sea and under-sea attack, if this function is the most important ; (iii) providing great striking power and reconnaissance force to assist land or sea forces to gain their object, if this function

is the most necessary. Organized as above, air forces can be switched rapidly from target to target in the strategical as well as in the tactical sphere as the situation changes, always remembering that gaining and maintaining air security is their primary role, since without this security the national life may not be able to go on.

CONCLUSION

Aircraft gravely threaten the ability of the Navy to control sea communications, particularly by their power of destroying the security of ports and bases. The only really effective method of affording such bases reasonable security is our own definite superiority in the air. The provision of such superiority is a definite duty of the air defence organization of the Empire. The general success of the air campaign, as a whole, will provide the necessary security for the functioning of our ports and bases, without which the naval organization for exercising actual control of the vital sea communications cannot function and the life of the United Kingdom cannot continue.

SIERRA LEONE

By COLONEL M. EVERETT, D.S.O., *p.s.c.*

HALF-WAY down the West Coast of Africa sleeps the quiet colony of Sierra Leone. It has no news value ; its name seldom appears in the Press ; and it has no regular garrison. To the Army officer the mention of its capital, Freetown, calls up an image of a small, hot, unhealthy station, to which he trusts he will never have the misfortune to be sent. A naval officer, if he has been there, is reminded of a large, hot harbour, a lot of negroes, and a hospitable club. An Air Force officer possibly has to look the place up in his atlas. But Sierra Leone is worthy of more serious notice, especially in these days, when the trend of international events must set all thinking men wondering when and where our next war will be.

Let us first consider some of the salient facts about the place. It consists of the colony proper and the range of hills, "Sierra Leone," which gives it its name, and also of the Protectorate—an area of dense bush about 200 by 150 miles in extent. The Colony is inhabited by Creoles, who are the descendants of freed slaves from America and the West Indies. They talk pidgin English and live more or less in European style, having entirely lost their tribal connections and customs. They are, perhaps, an acquired taste, though they are very interesting to observe. On Sunday morning the men—all woolly-haired negroes, turn out in top hats, tail coats, and white spats, and the women in French frocks ; they are said to get Paris models, via Dakar, before London does. They are all Christians tempered with Juju. They make good clerks, but not soldiers. The Protectorate, on the other hand, contains more or less unspoilt African natives, split up into a very large number of small tribes, many of which are enlisted in the Royal West African Frontier Force.

On the South, Sierra Leone is bounded by Liberia, a Creole republic, inhabited by gentlemen of the same type as in Freetown, only more so, and on the East and North by that vast area, heavily populated in many parts by good fighting tribes, which is France's reservoir of man-power.

The Government is of the Crown Colony type, with a Governor and an Executive Council of the leading officials, handicapped by a

Legislative Council, which includes some of the leading Creoles. Control has in recent years been tightened up and the amount of self-government reduced ; this was very necessary. The garrison consists of one battalion of the R.W.A.F.F., which is administered by the Colonial Office, while the Royal Navy is represented by a couple of sloops which occasionally visit the harbour.

Freetown has a large and very beautiful harbour : a vast estuary with low flat lands to the North, and tree-covered hills to the South, running down to the very edge of the water ; it seems to hold the town in its grasp, while it provides an anchorage for many ships. If we were at war with a Mediterranean Power it would become one of the most important places in the whole of the Empire.

In order to appreciate this fully it is necessary to understand something of the flow of world trade and of our methods for protecting the ships carrying that trade in war. It must be realized that shipping does not wander vaguely about the oceans but, in time of peace, it follows certain definite routes. These are not necessarily straight, but for all practical purposes they may be regarded as being the quickest courses between the port of departure and the port of arrival. In war, however, it is often possible for shipping to avoid enemy craft by deviating slightly from the normal routes—it must be remembered that the range of vision from a surface ship is very small, and from a submarine far less : at a height of 40 feet above the water the horizon is only about 8 miles away. The result of this " evasive routing " is to make it more difficult for hostile raiders to run down their quarry in the open seas and to tend to make them concentrate on focal areas. These focal areas may be near the ports of departure or arrival, or at defiles such as the Straits of Gibraltar. It is obvious that the greater the number of ships that pass through any particular focal area, the greater the chances a hostile ship will have of making a bag there.

To guard against such enemy action, especially by submarines, the most efficient form of protection would obviously be to provide each merchant ship with an armed escort. It is equally obvious, however, that no Power could ever have enough warships to do this, and therefore merchant ships have to be collected into convoys.

It will be noted that for all trade approaching England from the South Atlantic the nearest British port is Gibraltar, and the next after that is Freetown. In the case of war with most European Powers, Gibraltar will be so near the enemy's home ports that it will not be safe for ships to approach it independently with the idea of joining a convoy there. Convoys of all ships approaching the British Isles from the South Atlantic will, therefore, have to be formed at Freetown.

Next it is necessary to realize what an enormously large proportion of our vital supplies comes to us from the South Atlantic : approximately a fifth of the wheat and flour imported into the United Kingdom, half the meat, a third of the wool, and nearly all the tin ore—to mention only a few important items—come from South America, or West or South Africa. Whatever the conditions, and whoever the enemy, all these vital necessities would have to be convoyed from Freetown. If Freetown were lost, whence could they be convoyed ? The only answer is, from the port of departure, such as the Plate River, in South America ; but that would make impossible demands on the number of armed escorts which could be made available.

Another most likely result of a war with a European Power must be considered : the Mediterranean might easily become so unsafe, even to convoyed shipping, that it might be necessary to close it altogether for a time. This would mean that a large proportion of the food and raw materials required in the British Isles, and all the troops moved between Great Britain and India, Australia or any other part of the Empire in Asia or Africa, would have to be shipped round the Cape and convoyed to or from Freetown. In fact it is not too much to say that, in such circumstances, if Freetown were to be lost, England might starve and the Empire might be disintegrated.

So far, only the questions of sea-borne trade and its protection have been discussed ; yet the direct protection of trade is, of course, only one of the duties of the Royal Navy. For trade protection a large number of armed merchant cruisers, sloops, and destroyers will be required ; and these, in turn, will need protection from more powerful hostile forces. Even a single old battleship of the enemy could overtake 90 per cent. of our merchant ships, and she could only be neutralized by one of our own battleships. One of the most striking points in naval warfare to a soldier is the fact that in a fight between a battleship and any other kind of surface craft the battleship is bound to win unless her quarry is fast enough to escape. There is nothing like it in land warfare ; a weak brigade, by superior skill and luck, might defeat a division ; but a cruiser with 6-in. guns cannot possibly defeat one with 8-in. guns, nor can one with a speed of 20 knots possibly defeat one with a speed of 30 knots. If an enemy should attack our convoys with large battleships, nothing but battleships could beat them off ; and for such raiding he could, of course, use very old battleships which would be quite incapable of fighting a fleet action. It is not impossible, therefore, that the covering force operating from Freetown will have to consist of one or two battleships, some cruisers, and possibly an aircraft carrier.

So much for the naval importance of Freetown. Now let us consider

it as a centre of communications. As everyone knows, it is a cable station, although not a very important one, because the direct line to South Africa and to the East, if the Mediterranean cable gets interrupted, is from the Verde Islands to the Ascension Islands. It does, however, provide an alternative route, and in the event of war every alternative route would be of the greatest value; while as a wireless station Freetown might be of prime importance, providing as it does a very suitable site for a station on the Empire chain.

Finally we must not forget the air. Up to date hardly any of the inhabitants of Sierra Leone have seen an aeroplane; but where there is a great harbour there can also be a great flying-boat station, so it is quite possible that Freetown may become a station on one of the great air routes of the Empire.

THE FRENCH CAMPAIGN IN MOROCCO

By VICE-ADMIRAL C. V. USBORNE, C.B., C.M.G.

WHEN in the spring of 1912 a French Ambassador obtained from the Sultan of Morocco his signature to the document inaugurating the Protectorate, France's troubles had only just begun. She had emerged triumphantly from a long period of negotiation and diplomatic intrigue with the unchallenged right to administer the whole country in the name of the Sultan. Only a slice along the northern coast had perforce been allotted to Spain in order to satisfy British anxieties concerning the Straits of Gibraltar. Although Morocco was in chaos, France little thought that she had before her twenty-two years of continuous fighting before it could be claimed that the country had been pacified and brought under the control of the "Maghzen," as the Shereefian Government is called.

The story of this conquest is a long one, and with it is associated the great name of Marshal Lyautey. Though his connection with Morocco dates from much earlier, it was only in 1912, when he became the first Resident-General that Lyautey was able to impose his will and methods on the country. Its magnificent development to-day bears witness to his thirteen years' work, but when he left finally in the autumn of 1925, after stemming the formidable thrust southwards of Abd el Krim, much remained to be done. In the succeeding years Lyautey's influence endured, and his methods of pacification were in general adhered to.

The essence of his system lay in a sympathetic treatment of the natives, in the use of persuasion wherever possible and in avoiding the unnecessary shedding of blood. In a country where tribal influence was everything and each tribe was a law unto itself, his guiding principles soon resulted in a well-understood method which could be applied, with variations to suit local conditions, in every part of the country. Briefly it was this. A French post on the edge of a pacified region would set to work to establish relations with the surrounding unsubmitted tribesmen. Markets would be held regularly at which tea and sugar, both important to the natives, could be bought at low prices, while the native products of sheep and corn found a ready sale to the French. Free medical attendance was given to all. In this way the advantages of submission were made apparent, particularly to the women of the recalcitrant

tribesmen. It was explained to the Caids that once they had made submission their authority as rulers of the tribe would be maintained, and that their system of administering justice would be continued. These inducements resulted sometimes in the submission of a tribe without fighting, sometimes in splitting it into two parties, one of which desired submission and tranquility while the other was determined to hold out at all costs. Personal jealousies always played a large part, and were turned to account by the French. Some tribes made a nominal resistance for the sake of honour before submitting, others fought to the end with grim determination and self-sacrifice.

In this way the plains of Morocco were easily subdued, but the formidable ranges of the Middle and Great Atlas with their precipitous crags and hidden valleys offered tremendous difficulties. Beyond them, to the south and east, vast stretches of Sahara-like country, mountainous also in parts, constituted rather a different problem owing to the scarcity of water, the sparseness of population and nomadic nature of the fighting tribesmen.

By the end of 1933 the Middle and Great Atlas had been conquered, as had also the desert region to the east, including the Sarrho, the Tafilalet and the vast expanse between Ksar es Souk and Colomb Bechar, which is commanded by the French fortress of Bou Denib. South of the Great Atlas the influence of the Maghzen had been extended to include Tiznit and Aqqa, these two places being joined by a line passing through the Anti-Atlas range by Agadir Tesguent and Ait Abdallah (see Map).

The year 1934 ended a three-year period in which it had been determined to make an end of the business, and the objective for that year was the conquest of the whole of the country between the boundary line mentioned and the river Dra, separating Morocco from the Spanish colony of Rio del Oro to the South. Everywhere else in that great land peace now reigned and shy Berbers of the mountains were beginning to taste the sweets of security and to enjoy the surprising possibilities of motor-omnibuses, which for a few francs were prepared to take them to Casablanca and to give them their first view of two most strange marvels, a modern city and the deep blue sea.

Last autumn I toured the country and received great assistance from the military high command in studying the various operations on the spot. The 1934 campaign not only embodied novel methods of desert warfare, but was conspicuously successful at small cost in human life. The area to be conquered was of irregular shape and measured from one to two hundred kilometres North to South, by two to three hundred, East to West. It included half the Anti-Atlas range as well

as some hilly country further South ; but in the main it was flat desert land with a hard sandy surface. The Spanish enclave of Ifni, a strip of coast-line thirty kilometres deep, cut into it and complicated the problem ; for not only must the French avoid action in the Spanish zone, but they must if possible prevent the hostile tribesmen from taking refuge in it.

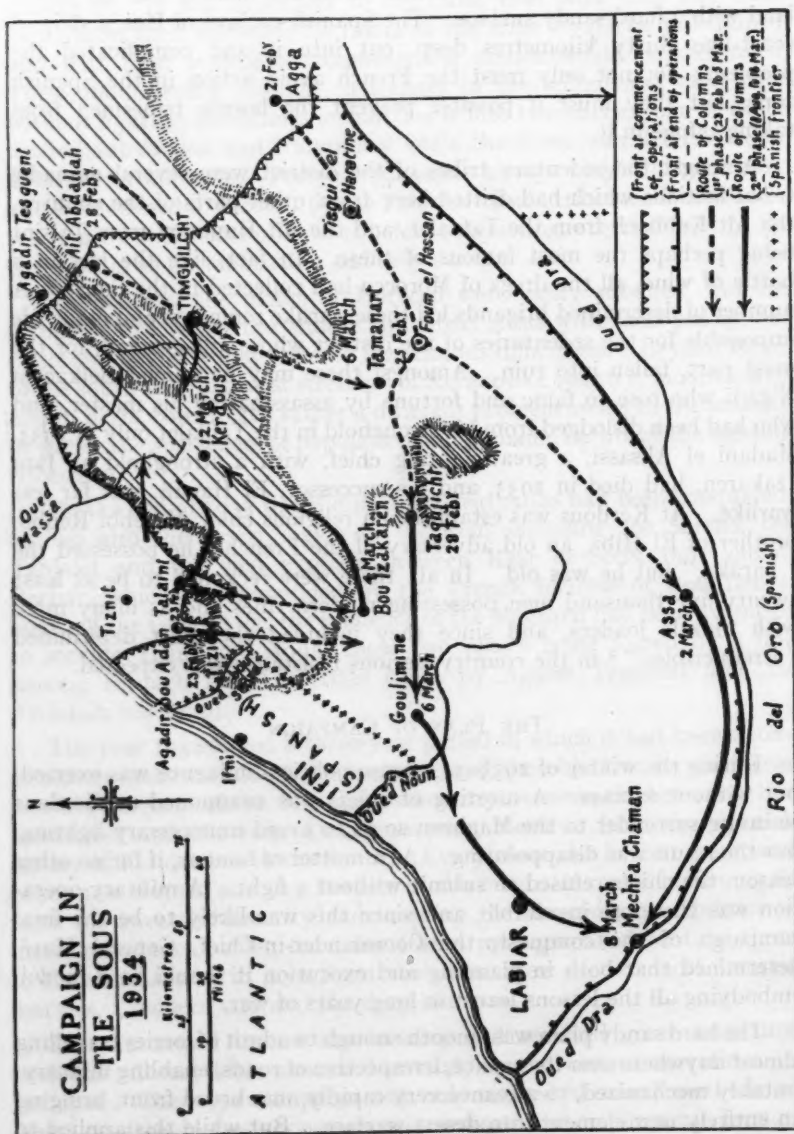
Amongst the sedentary tribes of the district were several nomadic tribal factions which had drifted here from other parts of the country, the Ait Kebbach from the Tafilalet, and the Ait Hammou from Talsint being perhaps the most famous of these. In fact, like the lees in a bottle of wine, all the dregs of Morocco had collected in the South. A number of determined brigands led these warlike remnants and made life impossible for the sedentaries of the district whose villages had, for the most part, fallen into ruin. Amongst these may be named Belkacem N'gadi who rose to fame and fortune by assassinating his master, and who had been dislodged from his stronghold in the Tafilalet only in 1933. Madani el Aksassi, a great fighting chief, with a stronghold at Bou Izakaren, had died in 1933, and his successor, El Hanafi, was far less warlike. At Kerdous was established a religious chief, Merebbi Rebbo, brother of El Hiba, an old adversary of the French ; he possessed the "baraka," but he was old. In all, there were reckoned to be at least twenty-five thousand men possessing modern rifles and as many more with muzzle loaders, and since they included the most determined "irreducibles"¹ in the country, serious resistance was expected.

THE PLAN OF CAMPAIGN

During the winter of 1933-34 intense political influence was exerted, but without success. A meeting of chiefs was summoned at Kerdous to invite surrender to the Maghzen so as to avoid unnecessary fighting, but the result was disappointing. As a matter of honour, if for no other reason, the chiefs refused to submit without a fight. A military operation was therefore inevitable, and since this was likely to be the final campaign of the conquest, the Commander-in-Chief, General Huré, determined that both in planning and execution it should be a model, embodying all the lessons learnt in long years of war.

The hard sandy plain was smooth enough to admit of lorries travelling almost anywhere over its surface, irrespective of roads, enabling infantry, suitably mechanized, to advance very rapidly on a broad front, bringing an entirely new element into desert warfare. But while this applied to the arid region of the South, the hill country near Tiznit and the

¹ Tribesmen determined never to surrender.



mountainous region of the Anti-Atlas between Tiznit and Aqqa required totally different treatment. A further consideration was that the greater the force used, the more rapid would be the success and the smaller the casualties both amongst the "dissidents" and the French. With these facts in mind, General Huré decided to utilize almost the whole available fighting strength of Morocco, in a force amounting to :

- 26 Battalions of infantry,
 - 1 Battalion of tanks,
 - 8 Groups of artillery, of which 2 were motorized,
 - 10 Squadrons of horsed cavalry,
 - 7 Squadrons of motorized cavalry,
 - 8 Squadrons of aircraft,
 - 3 Camel companies,
 - 13 Goums (mixed Moroccan troops),
 - 10,000 Partizans,
- a total of about forty thousand men.

The general idea was to fix the tribesmen of the mountainous region by an attack from North to South starting from Tiznit and Agadir Tésquent respectively, and at the same time to advance rapidly westward along the southern plain starting from Aqqa, this attack being launched a few days before the other.

The army was divided into two operational groups, with an Army Reserve under the direct orders of the Commander-in-Chief. The Eastern Group under General Giraud consisted of :—

- 8 Battalions of which 3 were motorized,
- 2 Companies of Camel Corps (one mixed horse and camel),
- 7 Squadrons of motorized cavalry,
- 5 Squadrons of horsed cavalry,
- 1 Group of motorized .75's,
- 1 Group non-motorized .75's,
- 1 Group of mountain artillery,
- 3,500 Partizans.

This group was again divided into two. Colonel Trinquet commanded the Flying Column consisting of all the motorized units as well as some horsed cavalry and the Camel corps. His mission was, by using his great speed of advance, to overcome the southern tribes one by one and then to threaten the rear of the tribes facing the attack from the North. His force was concentrated at Aqqa by the 23rd February, a great part of it having come across the Sahara from Colomb Bechar. The remainder of the group, under Colonel Maratuech (5 infantry battalions with cavalry and non-motorized artillery), was concentrated at Agadir Tésquent by the 25th February with the mission of con-

quering the "dissident" Ait Abdallah tribe close by, and then effecting a junction with Colonel Trinquet's force at Tamanart. A small group of native troops between these two was to advance with them to preserve liaison.

Aviation was under G.H.Q. control, any group being entitled to demand its services as required.

The Army Reserve group consisting of two battalions and five hundred partizans was placed West of Agadir Tescuent to fix the Ait Souab tribe, and the whole of the remaining force under General Catroux (16 battalions and other details), constituted the western group, and was concentrated at Tiznit by the 20th February, having occupied a month on the march from Marakech. It was divided into three sub-groups, the first under Colonel Legrand with the mission of facing towards Kerdous and eventually moving eastward into the mountains where a number of sedentary tribes dwelt; the second under Colonel Blanc with the objective of moving South from Talaint to Bou Izakaren; the third under Colonel Texier to advance southwards through Agadir bou Adan, parallel to Colonel Blanc towards Bou Izakaren. Each of these columns had its own route carefully surveyed by aerial reconnaissance, and the tribes it would have to deal with were detailed. As the most powerful enemy chief, El Hanafi, was established at Bou Izakaren, strong resistance was expected.

By the 21st February, then, all these forces were in place and ready to start. The numerous sedentary tribes of the Anti-Atlas, fully aware of the campaign about to be launched against them from the North, had prepared their resistance, and formidable groups had assembled at Ait Abdallah and in the hills near Agadir bou Adan. Many tribesmen, however, remained in their own district and Merebbi Rebbo remained at Kerdous which might be regarded as the heart of the northern resistance. Further South in the desert region, where steep arid hills rise from a sandy plain, and springs with their accompaniment of palm trees and *ksours*¹ mark the few habitable spots, the tribesmen of Goulimine, Bou Izakaren and Taghjicht were possibly still unaware of the threat of Trinquet's flying column, far away to the East.

Preparation of the base at Aqqa had been in progress, however, since before January, supplies being brought from Agadir by a roundabout route to the North of the dissident country. A fixed repair depot was established with immense stores of petrol and spare parts. The base had attached to it a mobile convoy of seventeen large lorries carrying water tanks, petrol tanks or available for stores. It was here that, in

¹ High walled village resembling a castle.

the first part of the campaign, General Giraud maintained his headquarters. And from here on the 22nd February, Trinquet advanced suddenly on the oasis of Tisgui el Haratine. His formation varied according to the terrain, but a typical one employed during his advance was as follows :—

THE MECHANIZED FORCE

An advanced guard, consisting of two squadrons,¹ with a gap of 1,500 metres between it and the main column. This consisted of two battalions, carried in lorries,² a motorized company³ and four batteries. 1,500 metres separated this column from the rearguard of one motorized company.

The convoy totalled 400 vehicles, and covered about 20 kilometres. Trinquet although retarded by heavy rain and by sand, which got into the motors, reached his objective by the afternoon. Slight resistance was offered, which was easily quelled, and very soon the head-men of the *ksour* made submission.

By the 25th, he had moved on another 50 kilometres occupying Tamanart and Fom el Hassan, two more oases. Except for horsed cavalry, Camel corps and *compagnies sahariennes*, which are mixed companies of camel, horse and foot, the whole of Trinquet's force was motorized. In general, he travelled straight across the desert, the lorries picking their way to avoid boulders, but without any sort of road. Where hills had to be surmounted, however, the route had very naturally to be carefully prepared, and here horsed cavalry and *compagnies sahariennes* were particularly useful for reconnaissance. Soft sand, encountered occasionally, also retarded the heavier lorries, and it was previous experience of these two contingencies which dictated the intermixing of horse and camel units with the mechanized force. All the lorries had pneumatic tyres. A force so equipped, able to advance a hundred kilometres a day and to spread in a few minutes into a broad fighting formation, possessed surprising possibilities. It could appear over the horizon and within fifteen minutes completely surround an

¹ A squadron may comprise three light platoons and one heavy platoon—a total of 19 armoured cars. To these are added five transport lorries which carry a small nucleus of infantry. It is thus a combined unit in which armoured machine guns predominate.

² A battalion *porté* implies, as I understand it, that the lorries available cannot carry the troops all at once but have to make two or more journeys. It is thus much less mobile than a motorized company.

³ A motorized company usually comprises two platoons of armoured cars (say, 8 armoured cars) and one platoon of 13 lorries permitting the transport of 130 men. It is thus a combined unit in which infantry predominates.

oasis, bringing fire to bear on it from all sides. Against an advance of this character the tribesmen were utterly powerless. They had never seen anything like it before and were terrified into submission almost without a blow.

From Fom el Hassan, Trinquet detached his Camel corps with one motorized battalion and a goum, south-eastwards towards Assa. The object of this, besides forming a flank guard, was to intercept "Irreductibles" who preferred to cross the Dra into Spanish territory rather than accept French domination. This party reached Assa, a distance of over a hundred kilometres, by the 2nd March, and the local tribe, the Beni Rani, immediately made submission.

On the 28th February, though delayed by soft sand, Trinquet's main force had reached Taghjicht, another region of *ksours* and springs. Here again, a few shots were fired and submission of the headmen followed almost immediately. So far, his advance had taken the form of successive bounds at intervals of two or three days, regroupments being constantly necessary to meet varying conditions, but after the 4th March, having passed the mountain districts East of Taghjicht, he marched every day, a day's journey varying from 25 to 80 kilometres.

By the 6th he had moved on to Goulimine where, after an exchange of shots which resulted in killing a few horses, the submission of the Ait Lahcen tribe was received. But the two most formidable nomadic tribes, the Ait Hammou and the Ait Khebbach, were in full flight to the westward and Trinquet lost no time in pursuing them.

The necessity for obtaining extra speed had already caused him to reduce and reorganize his column. He eliminated the two carried battalions, all the artillery except one battery (the fastest), and even a squadron of motorized infantry. The column, thus lightened, then consisted of one squadron, two motorized companies, one battery of motorized artillery, and a motorized group of infantry carried in four lorries. It totalled 190 vehicles. It was believed the fleeing tribesmen were making for the Dra, and Trinquet's force, travelling straight across the desert, passed through Labiar to Mechra Chaman, arriving on the 8th March, only to find that he had run right through the fugitive tribesmen who had scattered over the desert to let him pass. Even his reduced force had difficulties. The crossing of the Oued Noun took over two hours, owing to sandy bottom and steep banks, while large stretches of euphorbe, grown to enormous size, were a serious hampering factor, and when crushed, emitted an unpleasant-smelling vapour, injurious to the eyes.

But the sight of his swiftly moving columns was enough, the tribesmen had no fight left in them, and a little later they surrendered,

the Aït Kebbach at Goulimine, and the Aït Hammou at Mechra Chaman. Here Trinquet's two groups met on the 10th March. In seventeen days they had covered a distance of more than three hundred kilometres through unknown roadless desert country, and had taken the submission of numerous tribes. Nothing quite like this had ever been achieved before. His success had removed all remaining doubts as to the real value of mechanized armies in the outer theatres of war, but it was not achieved without careful organization. Owing to the great attention paid to the motors, there was a minimum of accidents. Up to Tamanart only two small lorries were out of action. At Goulimine, after two weeks work, one armoured car had to be written off. At Labiar, one armoured car and three lorries were out of action, and at Mechra Chaman two more lorries. In general, repairs kept pace with the advance, and less than 2 per cent. of machines suffered breakdowns necessitating their being sent to the stationary workshop, a result largely due to the travelling repair lorries, which worked all night.

Petrol consumption was very high. Whereas 40 litres per 100 kilometres was allowed for, it actually reached 70 litres—nearly double, but the motorized formations were never delayed from this cause. Transport of water was provided for, but the numerous wells rendered it unnecessary except for the horsed cavalry.¹

The northern columns, meanwhile, had not been idle. Colonel Maratuech at Agadir Tesguent, delaying his attack for a few days to give Trinquet time to create alarm in the South, moved on the mountainous region of the Aït Abdallah whose peaks rise to 6,000 feet. The enemy's position, strengthened by a series of defended walls, was strongly held, and his attack cost Maratuech eighteen killed and twenty-five wounded. By the 28th February he had taken their fortress, and occupied the village of Aït Abdallah. Establishing a post here, he pushed a strong detachment southwards to Tinguilcht, reaching it on the 4th March, and taking the submission of two tribal fractions. Pressing on again, he reached Tamanart on the 6th, and here made junction with the garrison left by Trinquet.

Colonel Texier's group moved off on the 22nd and occupied Agadir bou Adan. South of this, and to the West of the valley through which the main force would have to advance southwards, a pass, known as Tizi, constituted a point of strategical importance which must first be

¹ I am indebted to Colonel Charbonneau's articles in Nos. 119, 120 and 121 of the *Revue des Troupes Coloniales* of 1934 for much information concerning the mechanized units, and these articles are recommended to readers desiring to study the technical aspects of the campaign.

taken, and an enemy *harka*¹ was known to be in its vicinity. An attacking force was organized as follows :—

First line under Captain Latour consisting of a goum, 200 mokhraznis and 500 partizans (with the exception of two officers and two or three N.C.O's, all native troops.)

Second line, two battalions of the Foreign Legion and one battalion of Moroccan infantry.

The attack was ordered for the 3rd, and before dawn Latour's force scaled the heights and then moved along from crest to crest in two parallel columns towards Tizi. The hills here are of sharp friable rock and covered with the prickly and poisonous euphorbe, so the climb was not a pleasant one. Suddenly in the pitch dark, Latour found himself in the middle of the enemy *harka*. Fire was opened at point blank range and a hand to hand combat ensued. After killing a native officer and four or five men, the enemy took refuge behind rocks. Latour steadied his men and proceeded to dislodge the tribesmen with hand grenades. Just then he perceived that his other column, commanded by a subaltern, had similarly stumbled into an enemy group and was heavily engaged. Latour wheeled his line to the left and charged. The enemy was dislodged without great difficulty, but the commanding officer had been killed and the incident had cost two officers and five men.

It was the only serious resistance in this district, and Colonel Blanc and Colonel Texier now moved slowly southwards while Trinquet made his flying journey across the enemy's rear. They reached Bou Izakaren on the 4th March just as Trinquet was on his way from Taghjicht to Goulimine. By now, submissions were pouring in daily and news was received that Merebbi Rebbo, the supposed head of resistance in the Anti-Atlas, had fled from Kerdous. A difficulty arose over tribes whose territory overlapped into the Spanish enclave of Ifni. It would never do for the French to take submissions of tribesmen supposedly under Spanish rule. But this was overcome by drafting a truce which was duly signed. By its terms, the tribe concerned, the Ba Amrane, undertook to observe a benevolent neutrality towards the Maghzen ; to expel all strangers hostile to it ; to go to the assistance of the crews of aircraft which might fall in their territory and to hand over without ransom shipwrecked mariners on their coast ; the Shereefian Government undertook not to penetrate into the Spanish zone, and to permit the Ba Amrane to use the markets in the French zone on the condition that goods purchased should not be passed on to hostile tribes.

¹ Force.

It was now the turn of the sedentary tribes in the region surrounding Kerdous. In the second week of March General Catroux' three columns started to move eastward and at the same time Colonel Maratuech's two columns advanced westward. In this way they completely penetrated the region and received the submission of all the tribes concerned, a few aerial bombardments alone having been necessary to produce this result.

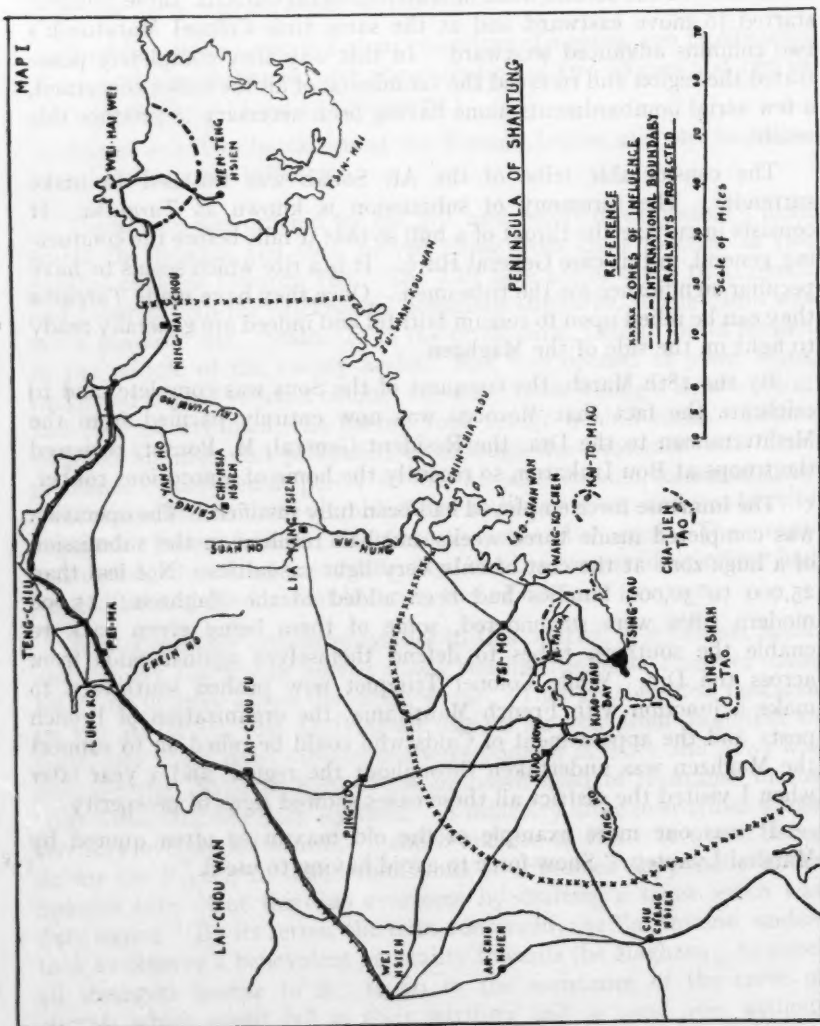
The considerable tribe of the Aït Souab was the last to make surrender. The ceremony of submission is known as *Targuiba*. It consists in cutting the throat of a bull so that it falls before the conquering general, in this case General Huré. It is a rite which seems to have peculiar significance for the tribesmen. Once they have made *Targuiba* they can be relied upon to remain faithful and indeed are generally ready to fight on the side of the Maghzen.

By the 18th March, the conquest of the Sous was complete, and to celebrate the fact that Morocco was now entirely pacified from the Mediterranean to the Dra, the Resident General, M. Ponsot, reviewed the troops at Bou Izakaren, so recently the home of a notorious robber.

The immense force employed had been fully justified. The operation was completed inside three weeks and had resulted in the submission of a huge zone at the cost of only very light casualties. Not less than 25,000 to 30,000 families had been added to the Maghzen; 15,000 modern rifles were surrendered, some of them being given back to enable the southern tribes to defend themselves against raids from across the Dra. While Colonel Trinquet now pushed southward to make a junction with French Mauritania, the organization of French posts and the appointment of Caïds who could be relied on to support the Maghzen was undertaken throughout the region, and a year later when I visited the district all these oases showed signs of prosperity.

It was one more example of the old maxim so often quoted by Marshal Lyautey, "Show force to avoid having to use it."

THE CAPTURE OF TSINGTAO, 1914



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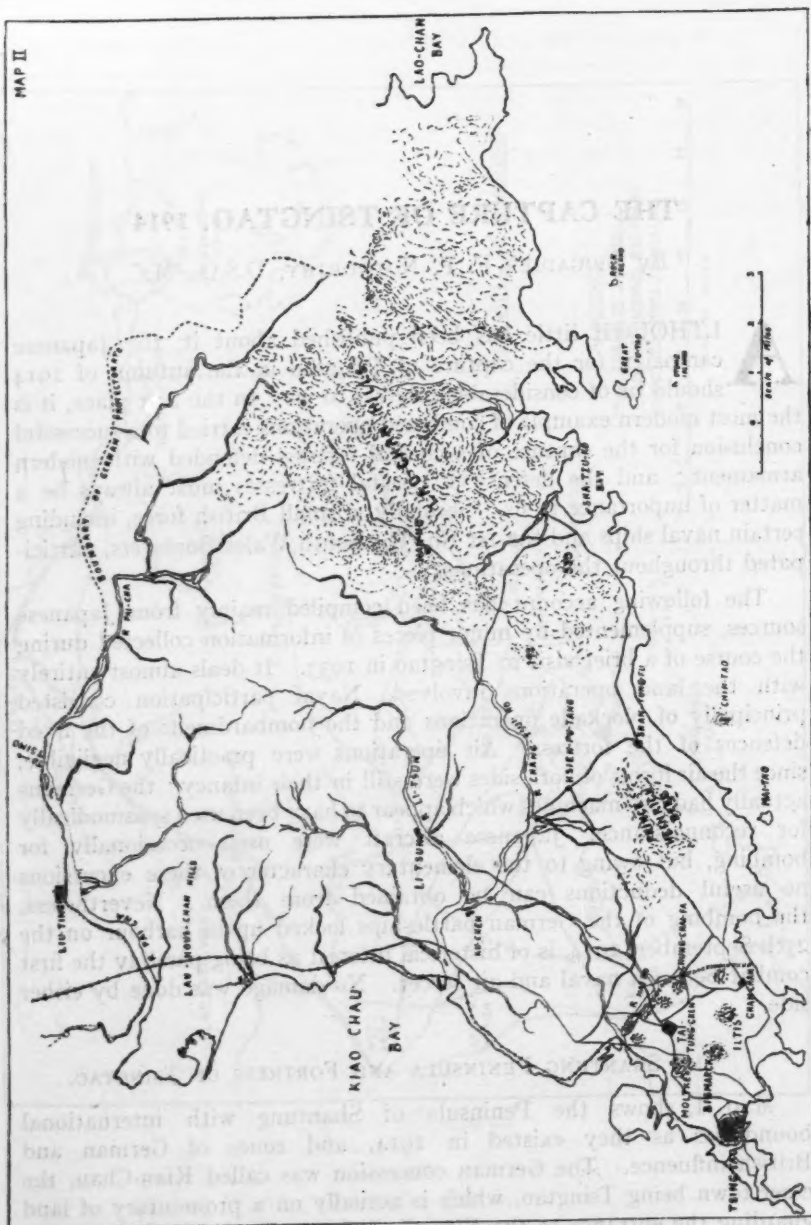
By BRIGADIER F. P. NOSWORTHY, D.S.O., M.C.

ALTHOUGH little has been published about it, the Japanese campaign for the capture of Tsingtao in the autumn of 1914 should be of considerable interest to us. In the first place, it is the most modern example of combined operations carried to a successful conclusion for the capture of a coastal fortress defended with modern armament; and the defence of coastal fortresses must always be a matter of importance to us. Secondly, a small British force, including certain naval ships and the 1st Bn. The South Wales Borderers, participated throughout the operations.

The following account has been compiled mainly from Japanese sources, supplemented by minor pieces of information collected during the course of a brief visit to Tsingtao in 1933. It deals almost entirely with the land operations involved. Naval participation consisted principally of blockade operations and the bombardment of the fixed defences of the fortress. Air operations were practically negligible, since the air forces of both sides were still in their infancy: the Germans actually had two machines which appear to have been used spasmodically for reconnaissance. Japanese aircraft were used occasionally for bombing, but owing to the elementary character of these excursions no useful deductions can be obtained from them. Nevertheless, the bombing of the German battleships locked up in harbour on the 27th September, 1914, is of historical interest as being possibly the first combat between naval and air forces. No damage was done by either side.

THE SHANTUNG PENINSULA AND FORTRESS OF TSINGTAO.

Map I, shows the Peninsula of Shantung with international boundaries as they existed in 1914, and zones of German and British influence. The German concession was called Kiau-Chau, the chief town being Tsingtao, which is actually on a promontary of land guarding the entrance to the Kiau-Chau Bay. The whole peninsula is very hilly, undeveloped and devoid of any roads except rough mountain



tracks. Villages are small and far apart. From a military point of view local resources could justly be described as negligible. As regards the country in the near vicinity of the fortress, the principal features are (Map II) the Laochan heights, about 4,000 feet; the valleys of the Li-sun, Chang-Tsui-Ho and Hai-Po; and the Prince Heinrich Berg, very rugged and inaccessible but dominating all the country to the South-West. The hills are generally bare, though near the fortress a good deal of afforestation with pine trees had been carried out principally with a view to concealing the permanent fortifications. The rivers are shallow and, except for a few days after heavy rain, offer little hindrance to the movement of troops.

The fortress itself had been strongly fortified. Ever since its seizure in 1898, Germany had been intent on making Kiau-Chau not only the naval base for their Pacific Squadron but also an important commercial port and the centre of their propaganda in North China. It is said that they spent no less than £80,000,000 on it. There were four natural lines of defence, viz. :—

- (i) The estuary of the Li-Tsun, hills 142 and 339, Sha-Tzu-Ko Bay.
- (ii) Ku-Chen—Shan Tungfu.
- (iii) The estuary of the Hai-Po, Chan-Chan.
- (iv) Mount Moltke, Mount Iltis.

In view of the strength of the garrison, the first two of these lines were too extended and could only be used for delaying actions by advanced detachments. The third line which was about four miles long and about three and a half miles from the eastern entrance to the town, had been organized as the principal line of resistance. It was provided with heavily built reinforced concrete closed defence works, with deep belts of barbed wire, pill boxes, concrete shelters for the garrison and every other modern contrivance. In addition, a further belt of barbed wire about ten yards wide sunk into the ground, protected by a masonry counterscarp some six feet high and illuminated at night by field searchlights, connected up these strong points and formed a continuous line from sea to sea. After the outbreak of hostilities the defenders further strengthened this line by a number of trenches and redoubts. More barbed wire was put up and some minefields were strewn about the place. As an example of military engineering it was, as is usual with the Germans, magnificent. But as regards siting it was by no means so good, for although it had a good field of fire, the Prince Heinrich Berg badly dominated the position.

Supporting this line and giving to it a certain amount of depth, were three important closed works—Iltis Hill, Bismarck Hill and Moltke

Hill which included in addition to smaller armament, heavy artillery of 21 cm. and 28 cm. calibre. The latter were capable of firing to sea as well, thus forming the primary or counter-bombardment artillery of the fortress. Close defence was catered for by subsidiary coastal batteries. Altogether, the fortress armament consisted of fifty-three heavy guns or howitzers, seventy-seven light pieces and forty-seven machine guns. (Note the paucity of M.Gs in comparison with modern ideas.) The total garrison, including Reservists, Volunteers, and sailors from the warships, amounted to just under 6,000.

Naval craft locked up in the harbour from the beginning of hostilities consisted of five gunboats, of which the largest, the "Cormoran," was 1,600 tons; a destroyer; a small Austrian cruiser—the "Kaiserin Elizabeth"; and six armed merchant ships.

MOBILIZATION MEASURES

From the end of July the following measures were taken to make the place fit to stand a siege:—

- (1) Reduction of the native population. The ration strength, civil as well as military, was reduced from 55,000 to 30,000.
- (2) Fuel and provisions were accumulated until there existed sufficient meat, flour, etc., for a year, although forage and vegetables could only be stored for six months supply.
- (3) Fresh water supplies were ensured, including a distilling plant. As a rule the town drew its water from sources outside the defence line, at Litsun, and on the north bank of the Hai-Po. Wells existed at Tsingtao but their water was of doubtful quality.
- (4) Chinese were requisitioned for the construction of defence works such as trenches in the intervals between the forts, additional obstacles, advanced positions, clearance of the field of fire, repair of the roads, etc.
- (5) Minefields were laid in the bay and in neighbouring inlets which might serve as landing places.
- (6) Lighthouses were extinguished on the 31st July, buoys lifted, the examination service strictly enforced and searchlights manned at night.

The works for placing the fortress in a state of defence were practically completed by the 15th August, the date on which Japan delivered an ultimatum to Germany demanding its unconditional surrender. Japan declared war on the 23rd August.

THE JAPANESE PLAN OF OPERATIONS

The Japanese had, of course, thoroughly studied the situation, and had a pretty shrewd idea of what they would be up against. Their original expeditionary force consisted of an infantry division with certain heavy artillery and engineer units. Later on, however, it was found that this force was insufficient. It was gradually reinforced and finally amounted to 50,000 men, 12,000 horses, one hundred and two heavy guns and howitzers, and forty-two field and mountain guns. The detailed composition is given in Appendix "A."

Many detailed reconnaissances of the Shantung coast had been carried out in previous years. The most favourable landing places were reported to be as follows (Map I) :—on the North coast: Teng-Chiu and Lung Ko; on the South coast: Ju-Shan-Kou-Wan, Chin-Chia-Kou, Lao-Shan-Wan, Wang-Ko-Chen. The place actually selected for the initial landing is interesting. It was the Bay of Lung Ko on the North coast, very nearly one hundred miles from the fortress. The direction of the prevailing winds in the autumn season was greatly responsible for this; but undoubtedly the governing consideration was security. The Japanese realized that they had unlimited time for their venture and they therefore played for safety first throughout.

Their general plan was as follows :—

- (a) To disembark the Field Force at Lung-Ko and move this as rapidly as possible via Ping-Too into the district of Tsi-Mo, which was to serve as the concentration area.
- (b) Once the district of Tsi-Mo was occupied, to seize the heights of Lao-Chan and so allow disembarkation of siege material and supplies of all sorts in Lao-Shan-Wan Bay.
- (c) To drive back the enemy from advanced positions so as to invest the fortress completely and then approach it.
- (d) If reconnaissance showed it possible, to take the place by storm; if not, by regular siege methods.

The orders for the fleet, which was divided into three squadrons, were as follows :—

- (1) The 1st Squadron will watch the sea routes South of Korea. It will destroy the enemy forces in the China Sea and protect merchant shipping.
- (2) The 2nd Squadron will blockade the Bay of Kiao-Chau and protect the transportation and disembarkation of the land forces.
- (3) The 3rd Squadron¹ will protect the sea routes from Hong Kong northwards, and will protect Japanese traffic.

¹ Two British warships co-operated with this squadron.

THE LANDING AND ADVANCE TO TSI-MO

On the 27th August, the blockade of Tsingtao was announced and twenty-four hours given to neutral shipping to leave the port. The Squadron in charge of the blockade occupied itself by sweeping the mines which the Germans had laid in profusion all round the coast. They also seized the islands off Tsingtao and posted look-outs on them with portable wireless stations.

To safeguard disembarkation at Lung-Ko, a mixed Brigade under General Yamada (including Cavalry, Artillery, and Engineers) landed as advanced guard on 2nd September. No opposition was met with, but the weather was all the time unfavourable; it rained almost unceasingly and the temporary piers which had been erected were several times put out of action. The consequence was that disembarkation of the Brigade was not finished till the 6th; and that of the main body which began immediately afterwards not till the 17th September instead of the 7th as according to plan. One cannot help thinking what a heaven-sent opportunity this would have been in modern days for bombing aircraft.

This delay caused General Yamada to begin his advance without waiting till the whole of his detachment was landed, and on the 3rd September he ordered his cavalry (22nd Regiment) to push forward, reconnoitre the country, drive the enemy back and secure Ping-Too by the 7th. "Regimental transport will be left behind. The Regiment will live on the country." As things turned out this order could not be carried out within the time because the streams swollen with rain were impassable. The reconnaissance party did fulfil their mission but at the cost of great fatigue and under considerable difficulties. The infantry which was to have begun its movement on the 5th was unable to move until the 7th. The rivers were impassable and roads morasses. Vehicles could only advance with the assistance of great numbers of men and the bridging train was only able to make six kilometres a day. The consequence was that even the advanced elements did not reach Tsi-Mo till the 12th, and the whole force became greatly disorganized.

The cumulative effect in war of adverse factors is always worth noting since it is very apt to be overlooked or ignored when working out peacetime schemes. Japanese troops are renowned for their marching powers and endurance, and so it is particularly illuminating to read in the Japanese accounts of this advance such items as:—"The cavalry reached Ping-Too on the 8th, but was obliged to halt for the whole of the 9th to rest men and horses, and to collect stragglers. The Yamada detachment reached Ping-Too on the 12th, but had to remain there till the 15th (three days) in order to reorganize and refit." Yet the distance from Lung-Ko to Ping-Too was only some sixty miles. In this

particular instance, these unforeseen delays caused a radical change of plan.

On the 7th September, General Kamio, the Commander-in-Chief of the Expeditionary Force, landed at Lung-Ko with his Headquarters. He appreciated that he would not now be able to concentrate any considerable body in the neighbourhood of Tsi-Mo before the 20th September at the earliest, and that consequently the troops which had been destined to cover the landing in the Bay of Lao-Chan could not be in position before the 24th or 25th. Siege material would be subject to similar delays and it was important to push on the operation as rapidly as possible. He consequently decided to stop the disembarkation of the last echelon of the fighting troops of his main body and transport it by sea to the Bay of Lao-Chan (South coast), where it would land and undertake immediately the protection of the landing of the heavy material at that place. This detachment, under General Horiuchi, consisting merely of one infantry regiment and a few cavalry troopers set sail on the 15th with orders to land at Lao-Chan on the 18th. On the morning of the 17th, the transports halted in the Bay of Tsin-Hai (South-East corner of Shangtung Peninsula), where the Officer Commanding, 2nd Naval Squadron with a number of ships was already waiting. The details of the landing were discussed with the naval authorities, and it was agreed that all the ships present, viz., six of the Horiuchi Detachment and eight of the 2nd Transport Echelon, should leave on the 18th at 1 a.m., escorted by one battleship. The sailors were to land at 6 a.m., followed by the regiment at 8 a.m.

The Staff allowed one day for completing the whole landing. Arrangements were also made for the tugs and lighters which were to move separately. The weather was fine but the sea was very rough and became more so during the day. The tugs and lighters, unable to complete their journey, had to be given up, disembarkation being carried out with only ships' boats. At 7 a.m. (one hour late), the transports reached the landing place in the Bay of Lao-Chan. The sailors had to land in broad daylight but luckily for them met no opposition. The remainder followed in due course, and disembarkation was complete by night except for the horses and waggons which were unable to land.

A weak advanced post of the enemy—two officers and thirty men, was encountered on Hill 169, but was driven off without any difficulty. General Horiuchi at once pushed southwards and made himself secure.

SITUATION ON EVENING 19TH SEPTEMBER

On the evening of the 19th September, the general situation was as follows :—

The advanced troops of the Japanese were in occupation of the right bank of the River Pai-Cha.

The main body of the Yamada Detachment was at Tsi-Mo and the Horiuchi Detachment at Wang-Ko-Chen. These were in touch.

The head of the division had passed Ping-Too.

Landing operations at Lung-Ko were nearly completed. Those at Lao-Chan for the 2nd Echelon of Transports and heavy siege material had begun.

From various sources it appeared that :—

The enemy had a line of observation on the Pai-Cha.

He had a first line of resistance on the heights South of the river.

He had another position still further South on the left bank of the Li-Tsun.

His main line of resistance was on the heights South of the Hai-Po.

The British Troops left Tientsin on the 19th.

CONCENTRATION AT TSI-MO

General Kamio now felt at liberty to pause for reorganization, and this he proceeded to do. The main body of the division was concentrated round Tsi-Mo. The Yamada Detachment was entrusted with the protection of this concentration and established patrols along the line of the Pai-Cha and in touch with the advanced elements of the Horiuchi Detachment on the left. By 25th September practically all the fighting units of the division had been concentrated in or in advance of Tsi-Mo.

The weather was improving but the state of the roads still gave trouble. Detachments of infantry had to be distributed among the artillery to help drag their guns. Convoys arrived with difficulty and recourse to local supplies became necessary.

Meanwhile, 2nd Echelon troops, including base details, line of communication units and siege artillery, were arriving and disembarking at Lao-chan Bay. The British contingent landed on the 23rd and two British warships which had escorted them from Tientsin joined the Japanese 2nd Squadron.

THE ADVANCE FROM TSI-MO (Map II)

General Kamio decided to begin offensive operations on the 26th. His information about the enemy was that they were actively patrolling the Pai-Cha ; that a garrison 500 strong was at Li Tsun and that the

enemy intended to offer powerful resistance about the Lao-Chan Heights, in which region they were reported to be about 2,000 strong.¹ In view of this information and no doubt in order to avoid the very difficult country of the Lao-Chan ranges, General Kamio decided to direct his main effort along the line Liu-Ting—Li Tsun—Tsingtao.

On the morning of the 26th, the Yamada detachment moved on Liu-Ting via Chen-Yang. It was shelled by a German ship in Kiao-Chau Bay but had no casualties. It crossed the Pai-Cha without any opposition and by noon occupied the line two to three miles South of that river in the neighbourhood of Liu-Ting. After that German rearguards checked it in the intricate country round the Lau Hous Chan hills and finally held it up for the night.

On the left, General Horiuchi fared much better than had been anticipated. Proceeding through the Lao-Chan region, he met with no opposition whatsoever and by night had established himself on a line running roughly North-West and South-East through Han-Ho. General Kamio thereupon ordered an advance on the 27th to be made up to the line, mouth of the Li-Tsun River—hills East of Hsien-Pu-Tang. After a certain amount of loose fighting the advance was successfully carried out, and by night he was all square in front of the German Ku-Chen—Shan-Tung-Fu position.

OCCUPATION OF FIRST LINE OF INVESTMENT

The Germans were now in a position of great natural strength. It overlooked all the open plain of the Li-Tsun and had very good observation from the top of Prince Heinrich Berg. General Kamio therefore decided to utilize the night for approach on to a forward line, from which he could launch his main attack at dawn. In addition, he ordered General Horiuchi to send a detachment to seize and occupy by night the summit of Prince Heinrich Berg—a very remarkable order in view of the formidable nature of the country and lack of knowledge of the dispositions of the German troops occupying it.

One company of the 46th Regiment and a section of Engineers was told off for the operation and christened "Kesshitai" (i.e., troops resolved to die). This forlorn hope set out at midnight and started clambering up the precipitous slopes of the Berg from the South-East. Progress was extremely slow owing to the difficult nature of the ground (it would have been a difficult ascent even by daylight), and the enemy's

¹ Actually the Germans had only two covering detachments: one facing Yamada, about three companies strong, and one facing Horiuchi about two companies strong.

fire which at times was very heavy. The detachment was unable to get close to the summit and in immediate contact with the Germans until dawn. But there it was definitely held up by rifle fire and hand grenades, both officers being killed. Fortunately, at this critical moment a weak patrol which had been sent round the North of the hill purely for reconnaissance purposes suddenly appeared on the summit some distance in rear of the German troops. The latter thought they were surrounded and hoisted the white flag—a good example of a most important objective being won by sheer bluff and luck.

At dawn, the division attacked all along the line. A certain degree of resistance was encountered in certain localities, but thanks chiefly to the previous capture of Prince Heinrich Berg the advance was uniformly successful and by 11 a.m. the whole German line Kuchan-Fuchan was in Japanese hands. Thereupon the Germans withdrew to their line of main resistance West of the Hai-Po River, and the close investment of the fortress may be said to have commenced. The total Japanese losses for the day amounted to 46 killed and 146 wounded.

Let us for a moment examine the situation from the German point of view. They had divided the defence into three sectors :

First Sector.—Prince Heinrich Berg—Half Coy. infantry.

Second Sector.—Excluding Prince Heinrich Berg including road Tsingtao-Litsun—three Coys. infantry.

Third Sector.—From above road, exclusive to the shores of the bay—six Coys. infantry.

Altogether about 950 rifles, twelve machine guns, twenty-one pieces of artillery and a certain amount of artillery support from ships in the bay. Not much to cover some eight miles of front. It is clear from the distribution of troops that the Germans expected the main attack to come along the northern sector and had reckoned the Prince Heinrich Berg practically unassailable. The capture of this position undoubtedly precipitated their withdrawal before they had been able to inflict any serious losses on the Japanese, or even appreciably to check their advance. The danger of putting too much reliance on a natural obstacle, however formidable, if it is not adequately defended, should be noted. But at the same time it is obvious that from the extent of front to be covered and the very weak force at his disposal, it must have been rather a case of "Hobson's choice" from the German Commander's point of view.

Another halt for reorganization now became necessary. It is not proposed to describe in detail all the work which was carried out. The important point to remember is that this halt had to be made: field and siege artillery and their ammunition had to be brought forward;

Roads had to be constructed—a work which employed practically all the infantry as well as the engineers; and a Decauville railway made to connect Lao-Chan Bay with the main parks at Li-Tsun. This moved the heavier supplies (artillery ammunition, etc.), but the remainder had to be carried by convoys of local carts and coolies, several thousand of whom were employed. Finally, a secondary base was established at Sha-Tzu-Ko to relieve the pressure on Lao-Chan, and a second Decauville connected it with Li-Tsun and various other depots.

Notwithstanding all this, considerable difficulty was experienced in getting up sufficient supplies. As usual, this factor more than any other really regulated the rate of advance. Yet it is one which is often overlooked or not emphasized nearly enough in peace manoeuvres and war games. The South Wales Borderers reported that practically throughout the campaign their men got no meat and had to subsist merely on pea-nuts and sweet potatoes or yams which they had to dig up from the ground for themselves.

THE FINAL PHASE

On the 6th October, General Kamio drew up his final plan. His main effort was to be directed against the centre, i.e., Tai-Tung-Chen-Chung-Chai-Fa. The line was divided into four sectors, the British being allotted the right centre sector which was directed on Tai-Tung-Chen. All siege artillery was to be massed in one group so as to be able to support all attacks, but particularly the principal one. The first phase of the operation was to consist of the establishment of a second line called "the advanced line of investment," and the second of an advance from this line to the first parallel and its consolidation. The third and last phase was the advance by regular siege methods—sapping and mining—from this parallel to successive parallels until a final position could be obtained from which the enemy's obstacles could be breached and the decisive assault launched. It must be remembered that the Japanese had done all this before at Port Arthur, so they knew what they were about.

It is not necessary to go into details of all the fighting which ensued. The advanced line of investment was occupied on the 11th October. The first parallel was not ready for occupation before the 28th.

On the 29th, the heavy bombardment began. The Germans evidently knew that their hour was near at hand as they took out their gunboats and cruisers into deep water and submerged them. On the 31st, the Emperor's birthday, an eight days' bombardment of all the German defence positions was begun at 7 a.m., and this was kept up night and day. Conflagrations started in the town and the Iltis batteries

were observed to be seriously damaged. On the night 3rd/4th November, the second parallel was occupied. On the 6th, all was ready for the final assault. The defences had been badly battered. The Germans began to demolish their own batteries. The one and only German aeroplane said good-bye and flew off to the South. At 9 p.m., the final attack started all along the line, but the Germans were not done yet. They put up a remarkably fine resistance, especially in forts Moltke and Bismarck, and it was not till 7 a.m. on the 7th November that the end came with the white flag hoisted on Signal Hill and the Iltis Berg. Taking it all round, it was not a bad performance.

The Japanese losses were 1,455 dead ; 4,200 wounded.

The German, 200 dead ; 500 wounded.

The British, 12 dead ; 61 wounded.

The time taken for the capture of the fortress from the date of the declaration of war (August 23rd) was seventy-five days. It may be of interest to analyse this :—

Concentration, embarkation and transportation

of 1st Echelon 10 days.

Landing, advance and concentration in the

Tsi-Mo area 24 days.

Driving in the enemy's outlying detachments

and occupying the first line of investment 10 days.

Close investment 31 days.

COMMENTS

From the point of view of modern study, this campaign suffers from two defects—the lack of a decisive time factor and the absence in any appreciable quantities of aircraft. Of these, the former is not very serious. It merely made the thing too easy. The only hope of the Germans must have lain in their expectation of an early decision in their favour on the Western Front when peace terms could be formulated which would apply to Japan as well. After the Marne their hopes must have rapidly evaporated, and the Japanese realized that time was no object. Naturally therefore, as has been said before, they took no risk, playing for “ safety first ” throughout. Thus there was no inducement to attempt a coup-de-main and the general plan of the campaign lacked anything in the nature of guile, strategy or surprise.

The question of aircraft deserves deeper consideration. Could this campaign have been conducted under modern conditions on the lines described ? What modifications of plan would have been necessary had

the German garrison included say one or two squadrons of modern aircraft?

A more detailed study of the campaign than has been possible here brings out very clearly the enormous amount of work and time required to disembark a force of any size at a locality not provided with properly developed harbour facilities; also the quantity of material required to maintain that force. The initial delays at Lung-Ko have already been noted, but the congestion throughout the campaign at the advanced base at Laochan was infinitely worse. The shores were littered for weeks with a mass of stores and material of every description: a British observer counted no less than fifty-seven ships at anchor in the bay on one particular day. In such operations coastal bases must be regarded as most dangerous military defiles; and, as has been pointed out in a recent issue of this JOURNAL¹, they are localities which it is particularly difficult to protect with anti-aircraft defences.

It is clear, therefore, that an essential preliminary for the attacker in any similar operation in the future will be the establishment of a very considerable degree of continuous air supremacy. This would constitute a phase of its own, involving probably the formation of an advanced air base on land from which intensive air operations could be developed; for aircraft operating from a carrier are at a disadvantage when opposed to shore-based aircraft. All this would take time—a factor which is naturally to the advantage of the defence. If the political or military situation were such that this additional time could not be afforded, it would appear that the reduction of a coastal fortress by the method of deliberate investment would have to be ruled out entirely; and that the attacker would be forced to attempt a surprise coup-de-main to achieve his object, a much more difficult and hazardous operation of war.

The problem is perhaps of more interest to us if examined from the defender's point of view, since we are more likely to be concerned with the defence of naval bases than their attack. In the first place, the foregoing arguments point clearly to the vital necessity of incorporating in the garrisons of our overseas defended ports an adequate and efficient complement of aircraft. Under modern conditions this is absolutely essential, not only for reconnaissance purposes during the precautionary period or preliminary stages of the attack, but also in the later phases as *the* counter-attack weapon of the defence. The conservancy and operational security of this aircraft contingent will be one of the principal cares of the defence. Fortunately, the range of modern aircraft is now such that it will be possible for practically all our over-seas defended

¹ *J. A. C.* "The Employment of A.A. Searchlights," by Lieut.-Colonel M. F. Grove-White, D.S.O., O.B.E., R.E., in February, 1935.

ports to receive aircraft reinforcements by air. But it is obvious that provision of adequate aerodromes and all other operational facilities must be made in peace ; *and* that these should be adequately protected from attack by land, sea, or air. Secondly, we have got to face up to the damage which will inevitably be done by modern bombardment from the air. It used to be a well-known dictum in the art of permanent fortification that the defences should be sufficiently distant from the vital area to secure the latter from medium or long range artillery fire. With the advent of the aeroplane, regarded as a long-range gun, that eminently desirable condition can no longer be obtained. Moreover, the congestion in every over-seas naval base, except perhaps Singapore, makes it an ideal aircraft target whilst the restricted territories round make effective anti-aircraft defence almost impossible. It would therefore appear imperative that in all modernization schemes more serious consideration should be given to the provision of underground or tunnelled accommodation for all services vital to the defence.

Bombardment from the air would seem to be now a much more serious danger than bombardment from the sea ; indeed it may be questioned whether the latter is not now a thing of the past ; for why risk valuable ships of war on an operation which can be carried out equally well with a much cheaper and quickly replaceable weapon, the aeroplane. Several naval ships participated in the bombardment of Tsingtao. They caused a certain amount of damage to the fixed defences but had to stand off too far to bombard the town effectively. It cannot be claimed that they seriously inconvenienced the defence or that they reduced the length of the siege by a single day. On the other hand, they lost a cruiser which was sunk by a German torpedo.

Reflecting on this, one cannot help wondering whether we are not still inclined to devote too much attention to the modernization of the primary, or counter-bombardment armament of certain of our over-seas naval bases at the expense of the provision of thorough anti-aircraft protection to such vital elements as depots, stores, signal communications and shelter for the defending aircraft.

APPENDIX A. ORDER OF BATTLE.

JAPANESE EXPEDITIONARY FORCE.

18th Division.

G.O.C. : Lieut.-General Ritsuumi Kamio, G.O.C.-in-C. Expeditionary Force.

Chief of Staff : Major-General Yamanashi.

23rd Infantry Brigade (Major-General Bunjiro Horiuchi).

46th and 55th Regiments.¹

24th Infantry Brigade (Major-General Yoshimi Yamada).

48th and 56th Regiments.

22nd Cavalry Regiment (3 squadrons).

24th Field Artillery Regiment (2 groups of 3 batteries of 6 guns with an ammunition column).

18th Battalion of Engineers (2 companies).

Divisional Bridging Train.

Divisional Telephone Detachment.

Divisional Train.

Sanitary Detachment.

Four Field Hospitals.

29th Infantry Brigade. (Major-General Goro Johoji, from 15th Infantry Division).

67th and 34th Regiments.

Heavy and Siege Artillery. (G.O.C. : Major-General Iwanosuke Watanabe).

Siege Artillery Staff.

Siege Park.

2nd Heavy Artillery Regiment (2 groups of 3 batteries of 120-mm. howitzers and ammunition column).

3rd Heavy Artillery Regiment (2 groups of 3 batteries of 150-mm. howitzers and ammunition column).

1st Group of Siege Artillery (3 batteries of 150-mm. howitzers).

2nd Group of Siege Artillery (1 battery of 240-mm. howitzers).

3rd Group of Siege Artillery (3 batteries of 105-mm. guns).

4th Group of Siege Artillery (3 batteries of 280-mm. howitzers).

One battery of 150-mm. guns.

One group of Marine Heavy Artillery (1 battery of 120-mm. and 2 batteries of 150-mm. guns).

Other Troops.

1st Battalion of Engineers (3 companies).

4th Battalion of Engineers (3 companies).

One mountain battery (6 guns).

One regiment of Railway Troops.

One detachment of Field Telegraphists.

One W/T Detachment.

¹ A Regiment comprised three battalions of four companies and one machine-gun company.

An Air Force detachment (6 to 8 aeroplanes and 1 balloon).
 A detachment of Field Searchlights.
 Reserve personnel and material for medical services.
 Detachment of operatives for the line of communications.

British Detachment. (G.O.C. : Major-General Barnardiston).

1st Battalion The South Wales Borderers.

1st Battalion 36th Sikhs.

In all—1,200 men.

300 Chinese auxiliaries.

350 horses.

Naval Forces.

The Naval forces which took part directly or indirectly in the campaign were formed into 3 squadrons, the 1st, 2nd and 4th.

In all they comprised :—

Four Dreadnoughts.

Four battle cruisers.

Thirteen cruisers, 1st and 2nd class

Nine coastguard ships.

Four gunboats.

Twenty-four destroyers.

Thirteen minesweepers.

Hospital ships.

Repair ships.

AIRCRAFT ATTACKS AGAINST WARSHIPS

A REPLY

By "SOLVER"

WE all know the type of problem picture under which runs the legend "How many things can you find wrong in the above."

In the days of my extreme youth I won a consolation prize—a box of pencils—from the Children's Supplement of, I forget what paper, for finding a large proportion of mistakes. It is perhaps my early success in this sort of thing that has made it impossible for me to resist making a critical examination of such pictures even now. Imagine, then, my joy in finding in the usually staid pages of the JOURNAL an article on "Aircraft Attacks or Gunfire against Warships," which afforded me in the medium of prose and simple arithmetic a similar chance of exercising my hobby as the intentionally inaccurate pictures did in the past. What a pity it is that no prize was offered to the reader—irrespective of age—who could spot the greatest number of losers in the article. There are so many obvious ones that interest is awakened from the very start; but careful study would repay the competitor as he is constantly coming across more obscure mistakes which he might have overlooked in the first instance.

We all know that figures can be made to prove anything, but it would take a very competent mathematician to prove convincingly, for example, that two normal sheep, each with four legs, have nine legs between them, and it would take one equally astute to discover the fallacy of the reasoning. The author of the article however makes it easier. He starts from a wrong premise and would say that two normal sheep, one with four legs and the other with five, have nine legs between them. The arithmetic is then correct and unassailable, and if one did not notice that a normal sheep does not have five legs, it would be impossible to criticize the answer.

This is rather the method adopted, although of course far less crudely, in the article and it is largely by these means that the author reaches his truly amazing conclusions. Let us examine the method in

detail. We will not cavil at the basic figure that the 50 per cent. zone for bombs dropped from 10,000 feet is 100 yards; it is probably rather high, but *morale* demands that the members of a fighting service should look on the bright side of things, so we will let it pass. But why should it be assumed, and it is nothing but an unsupported assumption, that owing to the distraction of war the bomb-aimer will be so upset that he will be three times as inaccurate? In parenthesis it is worthy of note that the author allows the A/A gun-crews to remain entirely unperturbed under fire, and to handle their guns with exactly the same coolness and accuracy as they do in a peace-time exercise. Surely the same "wind-up" factor should be applied to the gunner as to the bomb-aimer.

However, let us examine just what this "wind-up" factor means. At first sight, to the mind which has not been trained by the problem picture, it looks as if, by applying a 300 yard 50 per cent. zone instead of a 100 yard one, the chances of hitting with a bomb would be reduced to one-third. But this, of course, is not the case. The area of a 300 yard circle is 283,000 sq. yds. and if a battleship has a superficial area of 5,000 sq. yds. the percentage of hits, as the author says, will be 0.88 only. But the area of a 100 yard circle is only about 30,000 sq. yds. so that using the same formula the percentage of hits is about 8, or about one hit out of twelve bombs dropped, instead of one hit in 114. So we see the astonishing effect of applying a purely arbitrary "wind-up" factor.

But that is not all. The author has rather light-heartedly decided that the doctrine of the "near miss" is "not worth serious consideration." He bases this on the fact that against the American battleship "Washington," the effect of exploding 2,000 lb. bombs 20 feet from the ship was "apparently negligible." But though he admits that bombs exploded 10 feet away would be 32 times as effective, he does not think that the matter is worth pursuing further. One wonders how he would react to an invitation to stand under a 32 ton weight which was to be suspended from a cable tested to carry one ton. I cannot help feeling that he would give the matter very "serious consideration" before accepting the invitation. As a point of interest, let us just consider the possibility that a "near miss" within 10 feet would be effective. In the case of a ship 600 feet long the additional danger area would thus be $600 \times 10 \times 2 \times \frac{1}{9} = 1,333$ sq. yds. Therefore the total vulnerable area of our ship is 6,333 sq. yds. and about one bomb in ten would be effective.

I admit that in arriving at this figure I have so far entirely ignored the "wind-up" factor. As a sense of fear is present in the make-up of

all men, and war is apt to be dangerous, this is obviously unsound. But instead of rushing at a purely arbitrary figure, fantastically high, let us approach the problem calmly and try to arrive at a value for the factor based on reason. The extent of a man's fear must bear a close relationship to the risk to which he is exposed. The author of the article believes that the risk from A.A. guns is a very serious one, in fact he thinks it is 6 to 4 on the aeroplane being hit when flying at 150 knots at 10,000 feet. Now this is a very remarkable belief, as it means that A.A. gunnery has made a truly stupendous advance since the War, when the last unhampered full-scale experiments were carried out. Then, with fixed guns, accurately sited, on long bases for range finding and observation of bursts, and with gun crews in constant practice, it took many thousands of rounds to secure a hit. I readily admit that the science of A.A. gunnery has improved, but has it really improved to the degree that it is now possible with guns mounted on a moving platform, on a short base, and with crews restricted by lack of opportunity and by financial considerations from obtaining practice, to secure one hit out of 156 rounds? I frankly cannot accept it: there must be a catch here in the problem picture. Where is it? We must start somewhere, so let us accept the author's statement that "it has been observed that approximately 20 per cent. of the bursts are within 100 yards of the target." We cannot, however, accept the fifth leg of the sheep where he assumes that a burst 40 yards from the target will be effective. This is where the catch lies, clearly discernible of course to the practised eye of the problem picture fan. Now the vulnerable area of an aeroplane is very small in comparison with its total area—in the present single-engined aeroplane not more than about 10 sq. ft., looked at from any angle. Is it seriously contended that an area of about one square yard is bound to be hit by a shell bursting 40 yards away? I consider that, to be really effective, the burst must be within 10 yards. Perhaps I am optimistic, though experienced gunners tell me I am not, but let us see how this works out. The volume of a sphere of 100 yards radius is 4,190,000 cubic yards, and the volume of a sphere of 10 yards radius is 4,190 cubic yards. Thus it will take 1,000 rounds in the 20 per cent. zone to get a hit, or one hit to 5,000 rounds fired. These figures are much more in keeping with war experience. It will be observed that I have made no deductions for "overs" as an H.E. shell strikes back with practically the same effect as it does forward. Now what of the "wind-up" factor? Of the 96 rounds that a ship carrying four A.A. guns can fire in 90 seconds, only 0.019 will hit. As far as A.A. fire is concerned the bomb-aimer is exposed to about the same degree of danger that he would experience in pushing a pram over a Belisha crossing. I think therefore that we

can say that the risk is so small that the "wind-up" factor can be ignored as infinitesimal.

In point of fact the figures are even less favourable to the A.A. gunner than I have indicated above. Ninety seconds is an unnecessarily long run for the approach course to the target; 60 seconds is ample, so that the number of rounds fired before reaching the bombing position will be 64 only. But we need not labour that point, as in a year or two when aircraft are bombing at 250 m.p.h., or 4 miles a minute, a 90 second run would begin some 6 miles from the target, and the aircraft will be out of range for a large period of its run.

It will be interesting at this stage to see just how much we were thrown out in our estimates by the fifth leg of that sheep in so far as level bombing is concerned.

PERCENTAGE OF HITS ON SHIP		PERCENTAGE OF CASUALTIES TO AIRCRAFT	
<i>Author's figures</i>	<i>My figures</i>	<i>Author's figures</i>	<i>My figures</i>
0.4	8 (10 if near misses are allowed).	61	0.019 (0.013 if 60 second run up is taken).

Thus, in the instance the author gives of 1,000 aircraft attacking by level bombing 8 battleships and 8 cruisers, the aircraft should score 80 direct hits or 100 hits and near misses, while the A.A. guns would fire 1,024 rounds in 60 seconds or 1,536 rounds in 90 seconds. They could reasonably expect to hit one aeroplane on the fourth or fifth time that the aircraft came over to attack.

There are so many other mistakes in the picture that it would bore the reader if I pointed them all out, and also deny him the pleasure and mental exercise of finding them for himself. I cannot resist however saying a word about the speed and height factor. We find in the article that "Investigation shows that the size of the 50 per cent. zone for bombs varies directly as the speed of the aircraft." We are not told who conducted the investigation, but whoever did it has got the wrong answer, and here we are on really firm ground, free from all assumption and guess work, because in the last few years the bombing speed of aircraft has increased from about 85 m.p.h. to 130 m.p.h. The recorded results are available and show quite conclusively that the bombing accuracy has actually improved at the higher speeds. I suspect that the author has been led into the error of thinking that the bombing problem is the same as the gunnery problem, and recognizes that in the case of A.A. fire the accuracy will vary inversely as the speed of the target. This of course is a very serious matter, as A.A. guns

have probably never had an opportunity of firing at any target moving at a speed much in excess of 100 m.p.h. One begins to wonder whether it will be worth cluttering up ships with long range A.A. armament at all when aircraft are flying, as they will be in the immediate future, at 250—300 m.p.h.

The article again goes on to say that " exactly the same considerations apply to height," and again the author has misunderstood the science of the bombing problem. Accuracy does not vary directly as the height. The radius of a 50 per cent. zone of 100 yards at 10,000 feet is equivalent to a 50 per cent. zone of 143 yards at 20,000 feet. Again the author has tried to link gunnery factors with bombing, but has only helped to show that as height increases the difficulties of the A.A. gunners increase out of all proportion to those of the bomb-aimers.

I have not touched on the numerous " fifth legs " in the portion of the article devoted to torpedo bombing and dive bombing, although as regards the latter I cannot refrain from pointing out that it should not be defined as " the release of bombs when coming out of a dive " : the bombs are released while still in the dive and before pulling out.

Again there is a prettily concealed " fifth leg " in the opening portion of the article where the author points out that " in general, visibility from the air is the same as that from the surface." One is rather surprised to hear this, but even if it is true, it is worth remembering that from a reconnaissance point of view the ship, relative to the aeroplane, is almost fixed whereas the aeroplane can fly about, and in the course of about an hour can search a larger area of sea than a ship could in a day.

The author has certainly provided an entertaining " problem picture " in prose, so I hardly like to complain ; but I would make the suggestion that if he does it again and employs a topic of national importance as his subject, he should clearly label it " Problem picture—not to be taken seriously," otherwise there is a danger that someone might take his conclusions as sound and reasoned, to the great harm of the country's defences.

The traditional defence of the ostrich has never been considered really effective. Not only does the action of burying its head in the sand place the bird in a position of tactical disadvantage, but the sand and dust which must get into the eyes when this attitude is adopted are liable to distort the vision and to enhance the difficulty of seeing the future in clear perspective.

(NOTE.—An answer to this criticism appears in the Correspondence section of this Journal, p. 645.—EDITOR.)

THE DEVELOPMENT OF REGIMENTAL ROUTINE

By MAJOR M. K. WARDLE, D.S.O., M.C.,

The Leicestershire Regiment.

WITH its new organization, and the promise of real weapons to train with instead of cardboard and bunting, our infantry faces a fresh, exciting, and critical period. At last we know where we are and what we are—speaking of course purely regimentally; for in this article no attempt will be made to teach the General Staff and the Committee of Imperial Defence how to suck to-morrow's eggs. Its only endeavour will be to define the problem that confronts the Regimental Officer now and at all times—that of safeguarding the sound elements in our traditional training, and of breathing into them a renewed spirit, so that they may afford a solid foundation for whatever developments of organization and tactics time may bring. The great problems of Imperial Defence remain, indeed, in the realm of discussion. What is the truth of the efficacy of air attack? What is now the vitally vulnerable point in an enemy? How is it to be touched before the war brings common ruin? Is our real striking force the Army, the Navy, or the Air Force? And what arm is to-morrow's "Queen of Battle"? Is it still the infantry on which we must base our structure of auxiliary effort against an enemy? If so, what is to be the nature of our infantry and of those auxiliaries that are to enable it to destroy the enemy's defence? Or is the Air our real infantry, the spearhead of attack and the confirmer of victory, the true slayer of the enemy's will to resist, and the sole creator of such conditions as will allow the once all-important forces of sea and land to uncover their diminished heads and go about their humble jobs without incurring immediate disaster from the ubiquitous bomb? Nor shall we solve these problems by saying speciously that their solution is co-operation of all our forces—navy, army, air force, man power, industrial production, and propaganda. We have all heard of the ass that starved between two equidistant bales of hay of exactly equal attraction, because the bias was lacking that alone could incline it to one or the other. Where we cannot get agreement as to the size, equipment, organization, and training of our armed forces, is there hope of agreement as to their control and use in war?

But the regimental officer cannot, and need not await a solution of these uncertainties. For him it is enough to know that we are not to follow the advice of the Editor of the *Army, Navy, and Air Force Gazette*¹ and reduce our army to a mere handful of tank-borne Bow Street Runners, with the role of carrying out a few arrests, evictions, and occupations on the ground, at the behest of an Air Marshal Commanding-in-Chief. We are to keep an army, and its increased mechanization, and the changes in its armaments will inevitably lead it to new tactical methods if it is to cope with the unprecedented, and still increasing, resources of the defence: and cope with them it must, if a war is not to lead to protracted and ruinous stalemate. And this also is certain—that the means and methods it will be led to employ must tend, in minor tactics, to throw an increasing strain on the endurance, courage, resourcefulness, powers of command, and devotion to duty, of the most subordinate commanders, the section and platoon commander and their equivalent in other arms, whilst at the same time affording them decreasing support from supervision and propinquity. This modern emphasis, in battle, on the most subordinate leaders will be the point of greatest novelty, danger, and urgency in our training. And here our past history can help us. For though there is no precedent to the complexity and rapidity of invention that befog us, there is plenty to the need for creating in our troops and their subordinate regimental leaders such qualities as I have enumerated. Think of the rabble that passed for regular troops in 1640, and of the methods that Cromwell employed as a regimental commander with a preference for “a plain russet-coated captain who knows what he fights for and loves what he knows, than that which you call a gentleman and is nothing else,” before he could write “I have a lovely company; you would respect them if you did know them.” The interval between his description of the Parliamentary troops as “most of them decayed serving men and tapsters . . . base and mean fellows,” and the creation of a splendid regiment of horse that would stand up to twice their numbers of the gentry and their followers and beat them, was—six months of intensive training, not in any tactical novelties, but in the care and cohesion that harden the moral fibre in troops. Think of Charles Napier, bringing to the enervating climate of Bermuda the fresh airs of Shorncliffe and the man-mastership he had learned there under Moore, and turning, as Commanding Officer of the 102nd, a bored and drunken rabble into a battalion of first-class fighting men, under regimental officers whose profession he had changed for them into something rich and absorbing.

Our army history is indeed one long story of relapses into routinism

¹ See “This Our Army,” by Captain J. R. Kennedy, M.C., (Hutchinson & Co.)

and neglect after every withdrawal from the vigorous school of war, lit intermittently by the efforts and example of great trainers of officers and men. Our army has been rich in such inspiring trainers and leaders, and names spring readily to the mind—Cromwell, Lord Peterborough, Marlborough, Wolfe, Abercromby, Charles Stuart, John Moore, Wellington, Robert Gillespie, Charles Napier, Outram, Nicholson; and there were many more of the same quality but less known to fame. Their methods are no secret. In every case they worked upon a sound regimental system, in no sense invented by any one of them; but they each one revived and inspired and enlarged it by inculcating an active and responsible participation on the part of every officer in every detail of the training and lives and welfare of his men. Our task is not only to repeat that feat but to extend its scope to every section commander and platoon serjeant. It is true that in these days the Army can never sink, as in those days it often sank, into a scandalous state, with worthless, ignorant, and often vicious and dishonest officers, and ruffianly troops living under demoralizing and degrading conditions. But the problem is fundamentally the same: they had to make good soldiers out of bad officers and men; we have to raise good officers and men to an unprecedented pitch of military excellence in order to fit them to withstand unprecedented strain and to seize fleeting opportunities under conditions of ever diminishing control and increasing difficulty, confusion, and danger.

THE IMMEDIATE PROBLEM

We have inherited an admirable infantry system, based on the leadership and care of men by which Sir John Moore turned the existing system into that of the Light Division. And what are we doing with it? Each infantry battalion at home struggles to maintain its tradition of high military worth, under a constant drain of officers and men that makes continuity of training utterly impossible. A battalion abroad is better off in this respect, and is therefore always, and has been ever since the introduction of the Cardwell System, of greater military value than the home battalion. On the other hand its technical training is as a rule at a lower level and its equipment and organization less up-to-date. Taking the infantry as a whole I doubt whether many will think that the following generalizations err on the side of severity.

The regimental officer joins with little or no idea of the history and romance of soldiering, and no definite conception of the attractions of a life of service. Still, he is young, on the threshold of life, and on the whole ready for enthusiasms. It takes him about three years to become the typical junior regimental officer—pretty conscientious, keen on games, dividing his energies not unfairly between his social life and his

work. It takes him about eight years to get either fed up, or perfunctory. Then in most cases he recovers, and becomes a good officer, rather hide-bound, a little stiff in opinion and weak in logic, and somewhat lacking in imaginative insight and warmth of vision. If he does not recover at this stage he becomes an inefficient officer, and that is a very dreadful thing to be. In all this time he rarely learns to command a platoon as it might and ought to be commanded, or to command four platoon commanders as *they* ought to be commanded. For instance, his command of a platoon is seldom made a three or four-year job, as is done in higher commands and appointments, so that he may face the job, master it, and create something, before going on to a new task. He probably commands several platoons in his first two or three years, and often reverts to platoon command intermittently during his first eight years, whilst never being held entirely responsible for the administration and training of a single one for more than a few months at a stretch. During this time he may have been a signalling officer, a machine-gun officer, or a transport officer, but there is seldom any planned or methodical progress arranged for him through all these and other battalion employments. Throughout these chances and changes he not infrequently fails to realize that the drudgery of barrack routine may be made an interesting and real means of teaching men to work without supervision and to learn the elements of command and leadership.

Specialists and employed men have to be found, whoever goes short; and lack of recruits and the drain of the Indian drafts result in many young soldiers being taken from duty without getting the full benefit of early military training. They never learn the thoroughness that makes the real handyman, and finish their Colour Service far less employable than a man ought to be after seven impressionable years in the Army. As regards the higher standard of education of which we read so much, every infantry depot commander knows well that, though most recruits can read the *News of the World* and follow the simpler and more sentimental presentations of such artists as Mae West and Shirley Temple, they have far less education than the illiterate countrymen, whose fingers and minds had picked up the wisdom of their fathers, and who have been eliminated by the board school and the industrialist. We may thank Heaven that at last there seems some prospect of a real advance, late in time, towards better things in general education both of body and mind. So far, we have lost what we once had, and put in its place little that is worth having, and much that is bad. These being the conditions of our problem—and I feel sure that numerous exceptions do not shake the general fairness of my statement—let us turn to the corollary, the immediate objective of our efforts.

From the opening of his career, the regimental officer must have a real job and must be made to know that he has got one. He must hold a position of responsibility and of opportunity from the first, and from the very first be taught to fill it fully and efficiently. He must not only be told, but must find it borne out in his daily life, that his is a life of service in a great tradition, and that it holds rewards irrespective of advancement, such as few other services can offer. The doctor tends men's bodies; the parson holds a cure of souls; the lawyer voices men's rights at law or helps them to evade the awkward consequences of their torts and misdemeanours; the politician seeks to mitigate for them the inconveniences of corporate social life; and the industrialist juggles ingeniously with their labour. The military officer alone deals with the whole man and is charged with his entire welfare, health, happiness, efficiency, and future; and it is this every-angled approach that gives him the chance of building a trust and comradeship that is beyond the reach of men in other professions. If the officer's early career lacks coherence, or fails to set him consciously in these paths, his enthusiasm will survive only in exceptional cases.

The tendency to allow the young soldier to drift into "employment" with a few months' service must be overcome. Before he is allowed to leave ordinary duty in his platoon for any purpose he must be a trained infantryman. He must be interested in his work and in the whole of his daily life. He must learn to work without supervision, to think for himself, to become self-reliant and ready to take control of others. He must therefore understand the elementary principles of leadership and command, be able to obey with readiness and self-respect, and to command others with self-control, firmness, and resource. If all this is to be achieved, it is clear enough that the regimental life of every officer and man must be carefully planned. The trouble is that both are so frequently moved about, absorbed, unabsorbed, attached, detached, employed, and unemployed, that all consistency and coherence are lost. Under a good company commander their work and welfare is well organized—for the brief time that they stay under him; under a less good one, less well; under different commanders, differently; and under indifferent ones, indifferently. To be effective, a system must not only hold good throughout each battalion, but throughout both battalions of each regiment; for each officer and man changes company and battalion. In spite of these changes, how are we to make the life of both officer and man coherent, responsible, progressive, and continuously interesting?

Let us seek to outline such a regimental system. Most of its conditions are obvious. It must, as we have seen, be practised in both

battalions of each regiment, or every inter-battalion transfer will invalidate it. It may, and should, vary in every regiment, for in soldiering the stereotyped is always bad, and in our Army the regimental spirit's first reaction to any attempt to impose strange ways from without is one of nausea. The system must, then, be created within each regiment by each regiment, but it must embrace all the normal "key" activities of regimental routine and make of them a means of education in leadership or in working without supervision. It must organize the service life of the short-service soldier so as to send him out from the Army highly employable, and having in every sense enjoyed the full fruits of an army education. It must be embodied in a code, and the Colonel of the Regiment might well be the guardian to ensure that it lapses in neither battalion when a new commanding officer is appointed.

OUTLINE OF THE SCOPE OF A REGIMENTAL SYSTEM

To withdraw the licence, extended to almost every company commander, to run his company on any system he pleases provided the results seem good, is not to cramp his initiative. The true field for initiative in subordinate commanders (and of course this term includes even Commanders-in-Chief) is not the free choice of objective. It is the free choice and use of ways and means, in so far as such freedom does not preclude successful co-operation with others, for the achievement of an objective laid down by a superior (who may be anything from a unit commander to a War-Cabinet).

The object of the system may be defined as follows :—

- (i) To organize responsibility and work within the battalion so that each officer's regimental career is varied, progressive, comprehensive, and educative for extra-regimental work.
- (ii) To invest the inevitable routine in and around barracks with interest and training value for N.C.O.s and men, and so to mitigate, if not eradicate, the deadening effects which barrack routine is apt to produce.
- (iii) To ensure that the recruit rapidly becomes a well-disciplined soldier, and that the soldier is trained to work conscientiously and with initiative without supervision, and leaves the Colours with money saved, a trade learned, and with the character and characteristics that will fit him to get work in civil life and keep it.
- (iv) To ensure that this training will suffer no break when a man, N.C.O., or officer is transferred from company to company or battalion to battalion.

If the Territorial battalions can be induced to co-operate, a system should result that will lead to very rapid and efficient training of new units in war, and great mitigation of the evils of constant change and interchange of personnel that war entails. It will also result in far more complete and valuable co-operation between regular personnel and the Territorial units of the regiment to which they are posted or lent in peace time.

I suggest the following subjects or headings as among those that should figure in such a regimental system: the early training of the officer; the maintenance of organization; barrack-room routine; platoon administration; the education of the soldier for civil life; office work; care of cash and the keeping of accounts; care of arms; and a uniform system for the inspection of a company by the Commanding Officer.¹ Let us enlarge upon each of these headings in turn.

The junior officer's service, from joining to command of a company, must be planned to afford him progressive education in responsibility and leadership. With five years' service he should be fit to command and train a company in war, and should therefore receive appropriate training as a company commander under the Commanding Officer. With ten years' service he ought to be able to command a battalion in war, and brigade arrangements should be made for his training in that capacity by T.E.W.Ts and other exercises.

The system should make barrack life the vehicle for training in leadership in the following ways: the principles laid down in Section 6 of *Infantry Training*, Volume I, should be scrupulously enforced, so that, by a logical system of temporary amalgamations understood by all, there will always be a clearly indicated section or platoon commander on every conceivable occasion, without possibility of evasion or discussion. Supervision of work in progress should be abolished. Every section commander should inspect his section at the exact hour they are ordered to be ready; the platoon serjeant or commander should then inspect the platoon. Anything not up to standard should be produced at a daily "see-again" parade in the afternoon. The essentials are that every man should understand that the object is not a meaningless uniformity, but the training of the soldier in working without supervision, and in team-work without continuous control, and to give the leader a "daily dozen" in the elements of leadership (clearness about his objective, forethought, clear orders, consideration for his men,

¹ For those who are interested in such matters perhaps it may be permissible to say that they are dealt with fully, together with other aspects of a regimental system, in a small book by the present writer called "Foundations of Soldiering," published by Messrs. Gale & Polden at 3s. 6d.

and firmness), and that both man and leader should know that the repetition of bad work in the afternoon will be absolutely inescapable.

No one can live always on the mountain tops ; but once a month every platoon commander should put his entire house in order. What is the business of all time is the business of no time. A good method is to allot the first complete week in each month to the senior platoon of the company, the second week to the next, and so on. If at the end of his administrative week each platoon commander submits a return to his company commander showing that everything has been checked, and repaired, replaced, or put right, he will not only have a grip on the administration of his platoon but he will afford his company commander a simple means of ensuring that he is rising to his responsibilities. Such a return should not only deal with all clothing, equipment, necessaries, books, respirators, arms, and barrack furniture, and other things on charge, but should show the state of affairs as regards education certificates, proficiency pay, savings ; and finally it should include the name of the next man the platoon commander is prepared to recommend for appointment to lance stripe, or as a cook, storeman, clerk, or officer's servant. This pool provides the company commander with a list of candidates who can be tested or trained, while the whole return, if kept for two or three months before destruction, makes it easy to check the progress of the platoon towards administrative efficiency.

A soldier's Colour Service may be conveniently divided into early, middle, and later service (the first two years, the middle three, and the last two). The regimental system should lay down a course of care and instruction appropriate to each of these categories ; and each company commander should ensure that no month passes without every platoon commander taking appropriate action with regard to every man on his strength.

The essentials of a good office system are that it must work, it must be simple, it must be easily teachable, it must be adaptable to all offices in the unit, and it must be easy to supervise. Finally, it must be enforced. The advantage of a single system throughout the regiment, bringing the various guides and handbooks down to the detail of actual practice in company and other offices, is obvious. It should include a brief and clear explanation of double entry, designed to anticipate the pitfalls into which junior officers and inexperienced company and mess accountants are found to fall.

A uniform regimental system for the daily and weekly cleaning and inspection of arms, and for their treatment under special conditions, is necessary if the occasional lapses are to be avoided that occur in the absence of experienced officers.

A list may with advantage be drawn up, covering all points of the regimental system, whereby the Commanding Officer may at any time assure himself that each company is operating all branches of the system intelligently and with the necessary degree of uniformity.

THE ADVANTAGES OF A UNIFORM REGIMENTAL SYSTEM

The immediate advantages are obvious. Whatever company or job he is in, each officer and N.C.O will know where he stands. He will be master of his instrument, and thus free to invent variations on the regimental theme—a free man in the True Church—instead of having to tumble to a change of method every time he changes his immediate superior. Routine will no longer suffer from newcomers on transfer, because it will be known to all, and be unchanging in its essential details. But the greater results are the less obvious ones. With regard to barrack-room routine, for instance, let us imagine the case of a private soldier who finds himself in charge of a section and who cannot get the required results from his men. He has no lance stripe and is diffident, and he does not like being made to command a section. The platoon commander or serjeant sees this and makes a point of being present when he inspects his section; points out the things he misses; makes him order the men to show at the “see-again” parade what they failed to have right; attends that parade, and lends the moral support of his presence to the acting section leader whilst the latter passes, or puts back, the work shown. The men soon learn that it is far less trouble to deliver the goods in the first place; and the acting section leader soon acquires the confidence he lacked, through receiving the backing he needed. Once every man and N.C.O understands the reason for all this, the way is not hard. Self-reliance and readiness to take control become general. But firmness and consideration must, in the first place, be effectively imposed. But let us look wider: let us imagine every regiment in the army with a comprehensive system common to all its battalions—a real “infantry system,” evolved within each regiment, but on common lines throughout the Army. We should then have something that could be explained to the country by propaganda, by wireless, cinema, the press, television, or whatever other means we have, or are going to have, by which the Army may be explained to the nation. Recruiting troubles would vanish if we could convince the people at large that any soldier can have a good time and yet go to civil life at 25 years of age with £70 saved, and go as a better man in every way than his civilian counterpart, more experienced, knowing more of the world, better set up and with better manners, more accustomed to lead, more self-reliant, a real handy-man, resourceful and

thorough, cheerful and adaptable, a man who has learned the true artisan spirit, learnt "to something make, and joy in the making." But first we have to make it true. If we do, we shall go far towards solving some of our national problems too.

CONCLUSION

There are two distinct aspects of the art of soldiering in peace-time—the teaching of modern tactics, and the making of the man that will have to bear the strain in war. We have a most interesting phase of the former ahead of us, with our new organization. Our way in the latter is clearly illumined by the lessons of our past. It is the old lamps we need here—but they need relighting. If we regimental officers apply ourselves to achieving a new stride forward in the technique of the making of the British soldier, to creating fresh zeal, to bringing to bear on fundamental routine a new access of organizing ability, a deepened sympathy and understanding of the daily life of our men with its too often irksome trivialities, we shall at least be sure of this—that no commanders or staff in the world will have better material than that with which we shall provide them. But let us not deceive ourselves, crying "Peace! peace!" where no peace is. Let us not be contented with our present fairly efficient way of carrying on. Let us cease from the lone-handed battalion struggle and create a *regimental* system that will go far to loosen the clutching hand of the late Lord Cardwell's ghost.

THE ARMY OF TO-DAY

By LIEUTENANT-COLONEL A. G. ARMSTRONG

(This is the second of a series of three articles written with the object of making each Service better known to the other two. An article describing how the Navy is administered, organized and directed, and what are the functions of its various units, appeared in last quarter's JOURNAL. The third article, dealing with the Royal Air Force, will appear in the November number.—EDITOR.)

THE British Regular Army sprang from the New Model, which Parliament authorized in its Ordinance, dated 15th February, 1645. The struggle between the Cavaliers and Parliament had been going on for three years with varying fortunes, and by the end of 1644, the condition of the Parliamentary Forces, as a whole, had greatly deteriorated. If victory was to be gained, it was obvious that the Army would have to be both speedily and drastically reorganized. Parliament, to begin with, fixed the strength of the New Model at—in modern phraseology—one Cavalry and one Infantry Division. The men were, for the most part, volunteers from the remnants of the forces of Essex, Manchester, and Waller, supplemented where necessary, by the press-gang. The new Commander-in-Chief, Sir Thomas Fairfax, concentrated the Army at Windsor and took vigorous measures to improve the discipline, training and equipment. The troops received for the first time scarlet tunics with different coloured facings for the various regiments.

The composition and organization of the Headquarter Staff was as follows¹:—



¹ History of the British Army (Fortescue.)

This organization may usefully be compared with the present-day composition of the Headquarter Staff of a Division (see p. 558) which in many respects closely resembles it. The Chief of Staff, in addition to his other duties, commanded the Infantry Division. The Secretary-at-War, from whom the present office of the all-powerful Secretary of State for War is directly descended, was then a comparatively humble individual. John Rushworth, a civilian, was the first holder of this appointment and his staff consisted of only two clerks. He acted as Secretary to both the Parliamentary Council of War and to the Commander-in-Chief, whose correspondence he conducted.¹

Lieutenant-General Oliver Cromwell commanded the Cavalry Division, and Lieutenant-General Hammond, the Ordnance, including the Artillery and Engineers.

The quality of the leadership and training may be judged from the fact that after only three months embodiment the New Model won its first great victory on 14th June, 1645, at Naseby. The Army thus gave an early example of its astonishing powers of improvisation and of its determined fighting spirit.

There is no room in a summary such as this to go into details of the various developments in the system of command and administration through the centuries, but a few landmarks may be noted. In 1676, King Charles II issued a Royal Warrant appointing James, Duke of Monmouth, as Commander-in-Chief. This warrant, however, greatly increased the powers of the Secretary-at-War and laid down that "all such kinds of Warrants and Orders as formerly issued from the Duke of Albemarle (General Monk) . . . shall have Our sign manual only and shall be countersigned by the Secretary to Our Forces as by Our Command."²

The responsibility for the issue of military commands, and for the arrangements for reliefs and changes of quarters still rested with the Commander-in-Chief, but as compared with his predecessor, General Monk, his powers were greatly reduced. The reasons for this change were probably personal, as although the King's affection for his son is a historical fact, it is unlikely that he was blind to the Duke's unfortunate weakness of character. The system of dual control of the Army thus initiated lasted until 1904, when it was finally swept away by the Esher Committee, and was the prime cause of the muddle, inefficiency and waste of life, which characterized so many of our earlier overseas campaigns.

¹ "Cromwell's Army" (Firth).

² "The War Office, Past and Present" (Wheeler).

In 1704, the year of Blenheim, as a result of scandals in the office of the Paymaster-General, a reorganization of Army administration took place by which the Secretary-at-War became a political officer, taking charge of all military matters in the House of Commons. It was, however, not until the passing of Burke's Act in 1783, that he was definitely made responsible to Parliament for the financial business of the Army. In 1794, the system of higher control went through a further development, for Pitt placed the entire conduct of the military operations against Revolutionary France in the hands of the Secretary of State for the Home Department. The Prime Minister, it appears, had little confidence in the then Secretary-at-War and wished to relegate him to a subordinate position. The Secretary of State dealt with all military commissions and promotions, while his Department was responsible for the planning of military operations. The Commander-in-Chief and the Secretary-at-War merely provided the machinery for carrying out plans already decided upon by the civilians. Here we have the key to a correct understanding of the disastrous campaign of 1794-95 in the Netherlands, in which the British Army was for all practical purposes destroyed. In 1795, King George III appointed H.R.H. the Duke of York as Commander-in-Chief. The Duke proved himself to be a conscientious and skilful administrator and greatly improved the discipline and training of the Army. Amongst other measures, he placed the departments of the Adjutant-General and the Quartermaster-General on a sound basis, introduced the Officers Confidential Report, and founded the Royal Military College, Camberley. But the Secretary of State still retained full financial control.

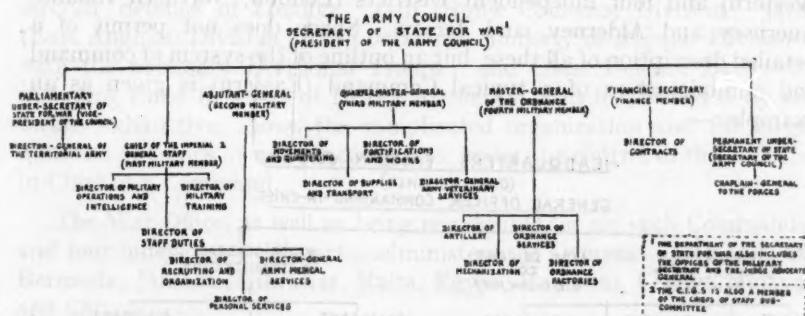
In 1855, as a result of the weaknesses in the system revealed by the Crimean War, the post of Secretary-at-War, which had existed for over two hundred years, was merged into the office of the Secretary of State for War, and a considerable centralization of functions took place. The Board of Ordnance, first established by King Edward IV in 1483, was abolished and its duties distributed between the office of the Commander-in-Chief and the Secretary of State for War. The Army Medical Department, the Commissariat Office, and the Board of General Officers—responsible for clothing contracts—were all merged into the new organization known for the first time as the War Office. The military command of the Army still lay with the Commander-in-Chief, but the Secretary of State was now responsible to Parliament for the manner in which the former carried out his duties.

THE ESHER COMMITTEE

After the difficulties experienced in the South African War of 1899-1902, Mr. Balfour, the Prime Minister, decided that the time was ripe

for a thorough and final reorganization of the whole of our military system. He accordingly appointed a strong Committee under the Presidency of Lord Esher, to examine the question and make recommendations. This Committee carried out its work with remarkable thoroughness and speed, and by March, 1904, had presented its report. Mr. Balfour accepted the bulk of the recommendations and issued immediate instructions for carrying them into effect. The Army Council, consisting of the Secretary of State for War, the Parliamentary Under-Secretary of State, four Military Members and the Financial Secretary was created, while an Order-in-Council made the Secretary of State responsible for the whole business of the Army and sub-divided the various duties among the several Members of the Council. The office of Commander-in-Chief was abolished.

The composition and organization of the Army Council, as it is to-day, is given below:—



This organization, which marked a great advance on any previous system, stood up well to the unparalleled strains and stresses of the Great War. The War Office carried out the vast expansion of the Army with, on the whole, remarkable success, and the country owes to it and to its creator, the late Lord Esher, a deep debt of gratitude.

THE ARMY'S DUTIES

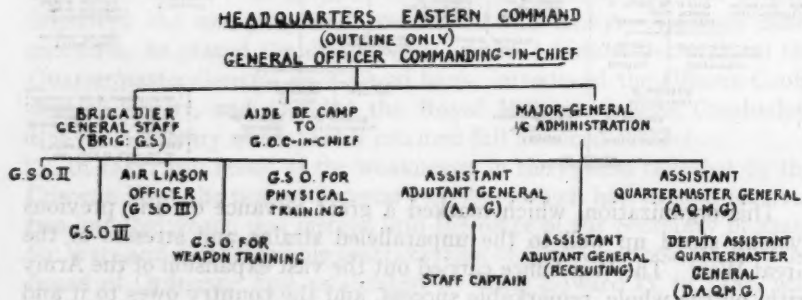
The White Paper relating to defence issued in March, 1936, stated that the Army had three main functions to perform: (a) to maintain garrisons overseas in various parts of the Empire; (b) to provide the military share in Home Defence, including anti-aircraft defence, coast defence and internal security; (c) in time of emergency or war, to provide a properly equipped force ready to proceed overseas wherever it may be wanted.

It must be remembered, the White Paper states, that the Army at

home constitutes the only source from which immediate reinforcements can be sent to any part of the Empire. The Territorial Army, though generally regarded as the second line in our military forces, actually provides the first line in anti-aircraft and coast defence at home. It is recruited on the basis that it will be ready to serve wherever it may be needed, and if the Regular Army should require support abroad, the Territorial Army will be called upon to give that support, serving not as drafts but in its own units and formations. It therefore holds an important place in our defence organization, and His Majesty's Government are doing all that is possible to encourage its recruiting and increase its efficiency.

THE ARMY AT HOME

The Army at home, including Regulars and Territorials, is organized in six Commands (Aldershot, Eastern, Northern, Scottish, Southern, and Western) and four independent Districts (London, Northern Ireland, Guernsey and Alderney, and Jersey). Space does not permit of a detailed description of all these, but an outline of the system of command and administration of a typical Command (Eastern) is given as an example :—



The following officers are attached to the Staff: Brigadier, Royal Artillery with three officers, R.A., as assistants; Chief Engineer and Staff; Chief Signal Officer; Senior Surveyor of Works; Assistant Chaplain-General; Assistant Director of Supplies and Transport, and Staff; Deputy-Director of Medical Services, and Staff; Assistant-Director of Ordnance Services and Staff; Command Paymaster; and Assistant Director of Veterinary Services. There are also certain special appointments including an Assistant Military Secretary and a Command Education officer.

The Regular troops at present located in this Command include the

following :—Field Troops (Regulars) ; 4th Division (of three infantry brigades) forming part of the Expeditionary Force ; Divisional Troops ; 5th Inniskilling Dragoon Guards ; 17th, 22nd and 27th Field Brigades, Royal Artillery (each of four Batteries) ; 7th, 9th and 59th Field Companies, Royal Engineers ; 4th Divisional Signals ; and three Companies Royal Army Service Corps. Other Regular Troops located in the Command are : 3rd Dragoon Guards ; three Field and one Medium Brigade, Royal Artillery ; Fixed defences, R.A., at Sheerness, Dover and Felixstowe ; one battalion, Royal Tank Corps ; nine Companies R.A.S.C., chiefly at Chatham, Woolwich and Kensington ; Heavy Repair Shop and Vehicle Reserve Depot, at Feltham.

Territorial formations included are : 1st Anti-Aircraft Division of four Anti-Aircraft Groups, each Group normally consisting of four brigades of Anti-Aircraft Artillery and two anti-aircraft battalions, R.E. ; this formation bears the grave responsibility for the anti-aircraft defence of London ; 44th (Home Counties) Division ; 54th (East Anglian) Division ; both organized similarly to Regular Divisions with the necessary Divisional Troops ; and Coast Defence Batteries, including three Brigades of Heavy Artillery. This list, which is by no means exhaustive, shows the complicated organization and the large numbers of troops of various categories, under the control of the G.O.C.-in-Chief of a Command.

The War Office, as well as being responsible for six such Commands and four independent Districts, administers the Overseas Commands at Bermuda, Jamaica, Gibraltar, Malta, Egypt, Mauritius, Ceylon, Malaya and China.

The Regular Field Troops kept up in the United Kingdom comprise one Cavalry Division—about to be mechanized—and five Divisions of all arms, with the necessary complement of Army Troops and Army Co-operation Squadrons, R.A.F.

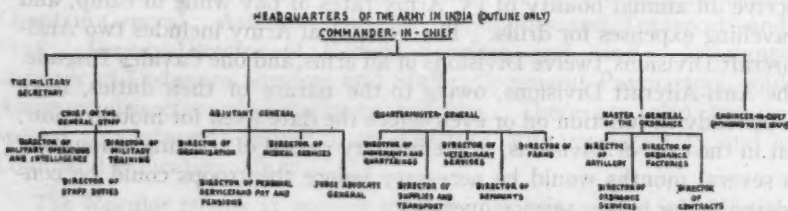
The Territorial Army consists of citizen soldiers, who accept liability for service abroad in time of war. They perform certain annual drills and attend camp in summer for a period of one or two weeks. They receive an annual bounty of £5, Army rates of pay while in camp, and travelling expenses for drills. The Territorial Army includes two Anti-Aircraft Divisions, twelve Divisions of all arms, and one Cavalry Brigade. The Anti-Aircraft Divisions, owing to the nature of their duties, have to be ready to function on or even before the date fixed for mobilization ; but in the case of Divisions, a preliminary period of training amounting to several months would be necessary before the troops could be considered fit for active service overseas.

THE RESERVES

The Army Reserve consists chiefly of soldiers who have engaged for a total of twelve years combined Colour and Reserve service, and have been transferred to the Reserve. The conditions of service vary, but seven years with the Colours and five in the Reserve may be taken as a fair average. The rates of pay depend upon the category, but the bulk of the men, who have recently passed into the Reserve, receive 9d. per day. They are mostly employed in civil life at home, though some are permitted to settle in the Dominions. The Supplementary Reserve includes men required to supplement the Army Reserve on mobilization. The personnel possess technical qualifications in civil life, such as engineering, railway work or mechanical transport, which make them most valuable to the Army in war. They receive an annual bounty varying from £6 to £15 according to their qualifications and accept a liability to mobilize at short notice and serve overseas. The Army relies entirely on the various categories of Reserves to bring it up to war strength on mobilization. In 1914, a large proportion of the men fighting at Mons had been engaged in their civilian occupations only three weeks previously.

THE ARMY IN INDIA

The British Troops in India form a detachment from the Home Army and are under the general control of the Government of India, which pays for them. The Army in India is composed of units of the British and Indian Armies serving side by side in the same brigade or division. Including the Regulars, the Auxiliary Force, India (similar to the old Volunteers), the Territorial Force, India, and the first line units of the Indian State Forces, it is the largest standing Army in the British Empire. The Commander-in-Chief is in direct command of the Army, and—through the Air Officer Commanding—of the R.A.F. as well, while he controls the Royal Indian Navy in his capacity as Member of Council in charge of Defence. He is responsible to the Viceroy and Governor-General for the manner in which he carries out his duties. There is no Secretary of State for War and no Army Council as at home. The organization of the Headquarter Staff of the Army in India is as follows :—



The Army is organized as : (a) Covering Troops for the defence of the frontiers ; (b) Internal Security troops, whose role is to keep the King's peace in that vast sub-continent ; and (c) Field Army. Covering troops are located chiefly on the North-West Frontier, where they are confronted by potential foes amounting to half a million expert, but loosely organized, guerilla riflemen, inhabiting a most difficult and mountainous country. The troops serve, as a rule, for two years on the outposts and are then relieved by battalions from the interior of India. They are always on the alert, ready to turn out at short notice. The life has great attractions for a keen soldier and acts for those battalions, which are serving there, as a rousing tonic. The Field Army includes four Cavalry Brigades and four Divisions of all arms, with the usual complement of Army Troops and a strong contingent of Army Co-operation Squadrons, R.A.F. Indian Brigades contain both British and Indian units—one British to two Indian in cavalry, and one British to three Indian units in infantry formations. The bulk of the Field Army is kept practically on a war footing and forms a magnificent body of seasoned soldiers, instantly available for the defence of Indian interests. The Army is organized in four Commands (Northern, Western, Eastern, and Southern) and the Burma Independent District.

The Headquarter Staff of a Command in India differs but little from that of a Command at home and requires no further description. To take the Eastern Command as an example : this is subdivided into three Districts (Meerut, Lucknow, and Presidency and Assam), and the Delhi Independent Brigade Area. Meerut District comprises the 3rd (Meerut) Cavalry Brigade and 3rd (Indian) Division of all arms (Field Army). Lucknow District includes the 6th Indian Infantry Brigade (Field Army belonging to the 2nd Division) and a strong force of Internal Security units at Lucknow, in addition to those located in the Allahabad Brigade Area. The Presidency and Assam District (H.Q., Calcutta) comprises the garrisons at Calcutta, Barrackpore, Dinapore, and Shillong, and the troops on special duty in aid of the Civil Power in the terrorist areas of Bengal. The formations in the Delhi Independent Brigade Area include the troops at Delhi, Agra and Muttra. These comprise British artillery, infantry and armoured car units and Indian cavalry and infantry regiments. Nineteen units belonging to the Auxiliary Force, India, are stationed in this Command. They include troops of all arms, light horse, armoured cars, machine-gun companies, artillery, and infantry. The formation known as the "Cawnpore Contingent" may be taken as an example. This citizen unit comprises the United Provinces Horse, three light motor patrols, No. 20 (Cawnpore) Field Battery, R.A., and the Cawnpore Rifles. Differing from the Territorial Army at home, the Auxiliary Force is under no obligation to serve abroad, i.e., outside

India. All ranks carry out a certain number of drills and attend an annual training camp. A reasonable standard of efficiency is reached and the units are of great value for internal security. The personnel is composed of European British subjects, including those born and resident in India, and form a potential recruiting ground for officers in case of a national emergency.

THE LINES OF COMMUNICATION IN WAR

One of the chief differences between the operations of a fleet at sea as compared with those of an Army in the field, lies in the necessity for a permanent line of communications for the latter. A fleet is, to a considerable extent, self-contained, and can carry on for a prolonged period, without the necessity for any replenishment of supplies. This is not so with an Army or with a detachment of the R.A.F. serving overseas. The supply of the R.A.F. in such circumstances and the protection of its aerodromes, are, it must be remembered, an Army responsibility. Troops on the move have to be supplied daily with food, and although they carry an emergency ration (tinned) sufficient for one day, any interruption of over two days in the system of supply would be very serious. As a safeguard, reserve stocks are accumulated, when possible, near the forward areas in case of an interruption of the communications either by enemy action or from floods or earthquakes. The lines of communication of an Army—and in this we may include any detachments of the R.A.F. serving in co-operation with the Army overseas—have been compared with the air tube, which connects the diver below the sea to his parent vessel on the surface. If the line is cut, the diver is lost.

The Army supply system, which has been evolved as the result of years of experience, is perfectly simple and works most efficiently as long as it is allowed to do so. During the Great War, to interrupt the even flow of supplies along the lines of communication was a matter of considerable difficulty. The fighting troops, deployed in long lines over broad areas of country, covered the rearward services as with a shield. The numbers of aircraft available on either side were generally insufficient to launch a really heavy attack on the enemy's communications. Sporadic air raids took place and caused much damage, but their effect was only temporary. Nor is it easy to say what the future will bring. The power of aircraft has greatly increased, and with its growth the number of suitable targets within effective range has been multiplied. Capital cities, overseas and home bases, and industrial areas all offer more tempting objectives than railways and communications in the theatre of military operations, especially if the latter are strongly

defended. Although frequent air raids may be expected, the scale of attack against any given line of communication is not likely to be heavy. Still the fluidity of air power allows of a sudden concentration against any selected objective and the possibility of a large-scale attack cannot be entirely ruled out. The organization of the overseas base ports of an Army in the field includes the base supply depots, although these are usually located several miles inland to avoid congestion in the actual port area. Railway "Pack Trains" run daily from the Base Supply Depot to the Supply Railheads (S.R.H.) and carry one day's supplies for the troops in the field. On reaching S.R.H., situated at a point within motoring distance of the areas occupied by the forward bodies of troops, the "Pack Train" is unloaded into the lorries of the Divisional Supply Column, R.A.S.C. There is one such column for each Division, organized as regards supplies, in two echelons of transport. Each echelon holds one day's supplies for the troops and runs on alternate days. Ordnance stores, clothing, equipment and mails are sent up with the ration lorries.

S.R.H. may appear to be, from the point of view of air-attack, a most vulnerable point. But this is not necessarily the case. The same S.R.H. would not be used continuously for several nights. Any railway station within motoring distance of the troops will serve and this proviso allows of a considerable degree of elasticity. Moreover railways, it should be remembered, are not the only means of communication. Roads fit for mechanical vehicles and canals can also be made use of for supply purposes. A road is not able to carry nearly as much traffic as a line of railway, but nevertheless would be invaluable as a stop-gap in an emergency. The Divisional Supply Column carries rations from S.R.H. to "Meeting Points." As it is possible that units may have moved overnight, "Meeting Points" are fixed by Brigade Staffs, where guides meet the lorries and show them the way to "Delivery Points." Here unit cooks' vehicles are located and rations handed over.

The supply situation may briefly be summarized as follows:—

At 6 p.m. on Monday: (a) On the man: one day's emergency tinned ration—not to be opened without orders—and the balance of the days ration in hand (known as the unexpended portion of the day's rations). (b) In the company cook's lorries: probably nothing, as these are awaiting the arrival of the R.A.S.C. Supply Column at "Delivery Points."

(c) In the vehicles of the supply column: *rations for Tuesday*; on the road between Supply Railhead and "Delivery Points."

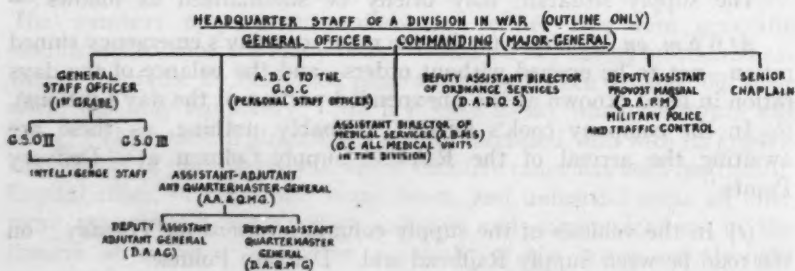
(d) In the 2nd echelon of the supply column : *rations for Wednesday* ; loaded up and waiting at H.Q. Divisional Supply Column in the vicinity of Supply Railhead.

(e) In the railway pack train : *rations for Thursday* ; on the rails somewhere between the Base Supply Depot and Supply Railhead.

The supply of ammunition and petrol is arranged on similar lines, but the demand for these commodities, it must be remembered, differs from the supply of food in that it is not constant from day to day. Ammunition and petrol are only required if the troops are either fighting or moving. In these circumstances there is always a sense of urgency and the demands for ammunition and petrol are generally likely to be heavy and sudden, thus throwing a severe strain on the administrative services.

THE DIVISION

The basic formation in modern war is the Division of all Arms. An Army Corps—usually known as a Corps—consists of two or more Divisions ; except in very special circumstances, it would rarely exceed four. The numbers of Divisions in a Corps and the actual Divisions themselves are continually changing according to the exigencies of the situation. The composition of the Division itself, however, varies but little. The same units and brigades usually serve on in a Division and share the struggles and vicissitudes of the campaign, thus rapidly developing a high divisional *esprit de corps*. A Division is the smallest formation in which all arms are represented, and is the largest body of troops that can be handled under modern conditions of war by one commander. A forceful Divisional Commander can, in the short space of a few weeks, impose his personality and fighting spirit on a tired and demoralized Division in a way that must be seen to be believed. The composition and organization of the H.Q. Staff of a Division is as under :—



The O.C. Royal Artillery (C.R.A.) and O.C. Royal Engineers (C.R.E.) do not belong to the Headquarter Staff but are attached to it. The Commander does not sign his own orders. These are signed by the Staff Officers concerned and issued to the troops in the name of the Commander. The latter, however, always sees any important communication before issue. The A.D.M.S., D.A.D.O.S., O.C.R.A.S.C., and D.A.P.M. are not Staff Officers; they are technical advisers to the Divisional Commander on their respective functions. For example: an order emanating from the A.D.M.S. and affecting all troops in the Division, is issued over the signature of the A.A. and Q.M.G., or one of his Assistants. The A.D.M.S. also commands the medical units in the Division. Owing to the practical abolition of horses, the appointment of Deputy Assistant Director of Veterinary Services on a Divisional Staff in war no longer exists.

The composition of the Division itself is at present under examination in the light of modern developments and has not yet been definitely fixed. After the Great War, the Army authorities decided on a Division of three Infantry Brigades—each of four battalions—and three Field Brigades R.A., with the necessary complement of ancillary troops; one Divisional Cavalry Regiment (horsed); three Field Companies R.E.; three Field Ambulances, R.A.M.C.; and Divisional R.A.S.C. units. The necessity for greatly increased fire support led to the inclusion of a third artillery brigade in the Division—there having previously been only two. In the post-War Army, each infantry battalion contained a proportion of heavy machine guns as an integral portion of its organization. The Machine-Gun Corps which did such good service during the War was disbanded and its functions were distributed amongst the infantry battalions of the Division.

THE INFANTRY

The organization of the infantry battalion gradually became more and more complicated and top heavy. It included riflemen, heavy machine guns, light automatic rifles, and finally mortars and anti-tank weapons. The functions of this unit became more intricate than one Commander could easily supervise or control and a drastic overhaul and simplification became necessary. There was also the problem of trained reinforcements in war: the fewer the number of different categories of personnel in a battalion, the better; training depots are in any case subjected to a heavy strain in providing drafts for the fighting units. Some process of rationalization by which machine gunners, or other technical troops, can be centrally trained at certain depots and riflemen at others, is therefore essential.

It was decided to withdraw the so-called specialist weapons, heavy machine guns, and anti-tank weapons from infantry battalions, and form them into special units called "support" or machine-gun battalions. This was, in a sense, a reversion to the old War organization of the Machine-Gun Corps. An experimental organization was evolved in which the infantry brigade formed the tactical basis. Three battalions of riflemen, armed in addition to rifles with light machine guns, light anti-tank rifles, and mortars; and one machine-gun battalion—entirely mechanized—which included heavy machine guns, heavy anti-tank weapons and scout vehicles, constitute the new brigade. Three such brigades form the infantry element of a Division, but as stated before, this organization is tentative only.

In order to increase mobility and save fatigue, rifle battalions, closely accompanied by their mechanized first line transport, will frequently move in motor vehicles.

The organization of the present Divisional Cavalry Regiment (horsed) is also under review. The comparative immobility of horsed units when acting in co-operation with mechanized or even partially mechanized troops is such that a further advance in the motorization of Cavalry may prove to be necessary. The Division will also be supported by "Infantry" Tank Battalions, which will be allotted by Corps or G.H.Q. as may be required, and by the fire of two extra Field and one Medium Brigade, R.A., from the pool at the disposal of the Corps Commander. The brunt of the fighting will fall, in the future as in the past, on the rifle battalions. These will receive greatly increased support from the Royal Artillery, Royal Tank Corps, Machine-Gun Battalions, and squadrons of the R.A.F. co-operating.

THE PLATOON

The fundamental fighting sub-unit of the rifle battalion is the platoon. This consists of a Subaltern Officer, Platoon Sergeant, and one runner, as H.Q.; and three sections each of one N.C.O. and seven soldiers. The armament of a platoon is varied and elastic, and allows of close adaptation to the varying conditions of war. The basis is the rifle and bayonet, and every man is first and foremost a trained rifleman. In addition, each section includes one Bren light automatic rifle. This weapon is normally mounted on a bipod, but has also a tripod mounting for firing on fixed lines or for anti-aircraft work. It is capable of a high rate of fire without mechanical breakdowns, and forms a most efficient "man-stopper." The platoon is also provided with one heavy anti-tank rifle, known as the "Boys," and all men are trained in its use. It is carried in a mechanical vehicle with the company transport, and is

immediately available if the platoon commander requires it. A platoon normally acts in co-operation with the other arms. But if, while acting alone or out of supporting distance, it is unexpectedly subjected to a low flying attack from the air combined with a tank attack on the ground, it can offer a determined and effective resistance with its three light-automatic weapons on their anti-aircraft mountings, and can oppose the tanks with a heavy anti-tank rifle firing armour-piercing bullets. If, on the other hand, the role of the platoon is to carry out a patrol, possibly by night, or to scale some precipitous hill, all these incumbrances to mobility can be left with the company transport and the platoon can move off in light fighting order. Between these two extremes many permutations and combinations are possible. In attack or defence, the platoon would usually cover a frontage of 150-250 yards. While acting on the offensive, it will generally be allotted a definite objective to capture and may be assisted in its task by "Infantry" Tanks and by the fire of heavy machine guns and field and medium artillery. The latter will fire either high explosive or smoke shell, according to the situation.

It is evident that, when success depends so much on close and well-timed co-operation, communication between the various units is of the utmost importance. To meet this need, great strides have been made of recent years in the use of wireless. Within Infantry and Artillery Brigades, wireless communication is provided in the shape of small sets carried with operators in light cars. These sets can be carried on pack if necessary. Larger sets, in lorries, are provided for larger units for work from H.Q. to sub-formations and units, while to avoid congestion on wireless and to guard against interference, other alternative means are made use of: e.g., motor cyclists, and lines for telephone or telegraph. Teamwork is of the essence of modern war. Success cannot be won by one arm alone, but by the combined efforts of all, working towards a common end.

FLEET GUNBOATS

By "NAVARINO"

A STUDY of the battle of Jutland cannot fail to leave the impression that, in a fleet action, the destroyer is expected to play a greater variety of parts than any other type of warship. Modern conditions tend to increase the number of her duties as a satellite of the battleship, and to-day the functions of a flotilla may, at any given moment, be one or more of the following :—

- (a) Anti-submarine screen.
- (b) Anti-destroyer force.
- (c) Anti-aircraft force (especially against torpedo-carrying aircraft).
- (d) Torpedo-attack force (against enemy battle fleet, by day or by night).
- (e) Night reconnaissance or a night-shadowing force.

At Jutland the Grand Fleet destroyers appear to have been used primarily as an anti-submarine screen or an anti-destroyer force, with the result that the greater proportion of them made no use of their chief weapon for offensive purposes—the torpedo. The design of the destroyer of to-day is still a compromise in regard to the weight and space allocated to torpedo armament, gun armament, and engines ; the object being, apparently, to secure a type of vessel which is fairly suitable for all the various duties she may be called upon to perform. But is this sound and logical ? In practice, the force required to screen our battle fleet from torpedo attacks cannot suddenly be despatched to attack the enemy battle fleet or aircraft carriers—probably miles away—or to shadow him at night, without leaving a dangerous gap in the screen. Moreover, the type of craft which is mainly designed for an offensive role is not necessarily best equipped for defensive purposes.

Let us consider each of the five functions which the destroyer is expected to perform. Even if, in the light of experience, the submarine peril is not of primary importance to a modern battle fleet moving at speed, it cannot be entirely ignored and still calls for a screen of light craft armed with quick-firing guns and depth charges. Enemy torpedo craft should be met by gunfire from the battle fleet's satellites before they

can close to a range at which they are a definite menace to their principal targets. Again, the extent to which these satellites can defend their "planet" from aircraft attack will depend on the efficiency of their anti-aircraft armament. For each of these three duties the gun is the essential weapon. Only when meeting an enemy destroyer attack can the torpedo be said to be any sort of asset.

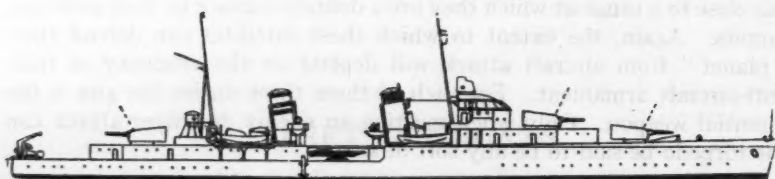
The value of the destroyer as a means of attacking an enemy battle fleet by day will depend on a combination of the highest obtainable speed with a powerful torpedo armament. If in this process of launching an attack a flotilla has to engage in a gun duel with enemy light craft, it will most probably result in failure to reach the main quarry. To dodge and outrun all attempts at intervention is the only hope of pressing home a successful torpedo attack by day. To a less extent the same applies at night, but cover of darkness gives more scope for surprise without necessarily calling for very high speed, although the latter must always assist to reduce casualties amongst the attacking force.

Night reconnaissance may well lead to opportunities for using the torpedo; but the chief object will be to make and keep contact with the enemy's main forces and not to engage in dog-fights with auxiliary units. Speed to avoid undesirable contacts or to extricate the scouting force from unsuitable encounters, is, therefore, of more importance than a powerful gun armament.

In short, for the first of the three functions—anti-submarine, anti-destroyer, and anti-aircraft work—the present-day destroyer carries a practically useless torpedo armament, and in consequence has an unduly weak gun armament. For torpedo attack by day, and for night work generally, she carries an unduly heavy gun armament: if this were reduced, the weight saved could be devoted to increased horse-power and higher speed.

These arguments point to the need for a new type of battle-fleet auxiliary—a "fleet gunboat," which, amongst other advantages, would permit of a better design of destroyer. As our next battleships will, it is to be hoped, have a speed of at least 30 knots,¹ their gunboat satellites should have a speed of at least 40 knots, while that of our new destroyers should approach 50 knots. These are by no means extravagant requirements judging by the performance of the French "Aigle," "Guépard" and "Fantasque" class. Those vessels carry a quite excessive torpedo armament (six to nine 21.7-in. tubes) for our proposed fleet gunboats, and an unduly heavy gun armament (five 5.5 in.) for our new design destroyers, yet they are good for over 40 knots.

¹ See "Our Next Battleships—the Need for Speed," in the JOURNAL for November, 1935, p. 749.



A FLEET GUNBOAT

Our fleet gunboats should be armed with eight 4.7-in. guns of a "universal" (A.A., anti-destroyer, and anti-submarine) type on twin mountings, or nine on triple mountings, if a really satisfactory design can be evolved; and a couple of multiple pom-poms. If weight restrictions and deck space will permit, they might also be equipped with a pair of 18-in. torpedo tubes—solely for use against destroyers. Incidentally, these craft would be an effective reply to the thirty or so French *contre-torpilleurs* class already mentioned, to which we, at present, have no effective answer in any vessel less than a light cruiser. Their high speed would enable them to out-manceuvre enemy light cruisers.



A FLEET-TYPE DESTROYER

Our new type destroyer must retain a torpedo armament not less powerful than that of the existing design, i.e., eight 21-in. tubes on quadruple mountings. She will be fast enough to elude light cruisers and also fleet gunboats—should other Powers adopt the type; but she cannot elude aircraft.¹ She must, therefore, have a small general purposes gun armament and adequate A.A. weapons—say, two 4.7 "universal" guns—one mounted forward and the other aft; also two

¹ It will be recalled that the Coastal Motor Boats engaged in the raid of 11th August, 1918, suffered severe casualties because they had no adequate means of driving off pursuing aircraft.

multiple pom-poms which should be so mounted that both could fire astern. The saving in weight by reducing the gun armament is not, of course, confined to that of the guns and mountings alone. There will also be appreciable economy in the weight of ammunition carried, also in the space required for magazines and shell rooms. Elimination of certain spare parts, fire-control gear, etc., will further increase the available weight and space to be allocated to the more powerful propelling machinery.

These are only the rough outlines of two new designs for battle-fleet satellites; but they will serve to demonstrate the principle that five different functions—two mainly offensive and three essentially defensive—cannot be performed efficiently by one and the same type of warship, and to illustrate what are the essential characteristics of the future destroyer and of a new type—the fleet gunboat.

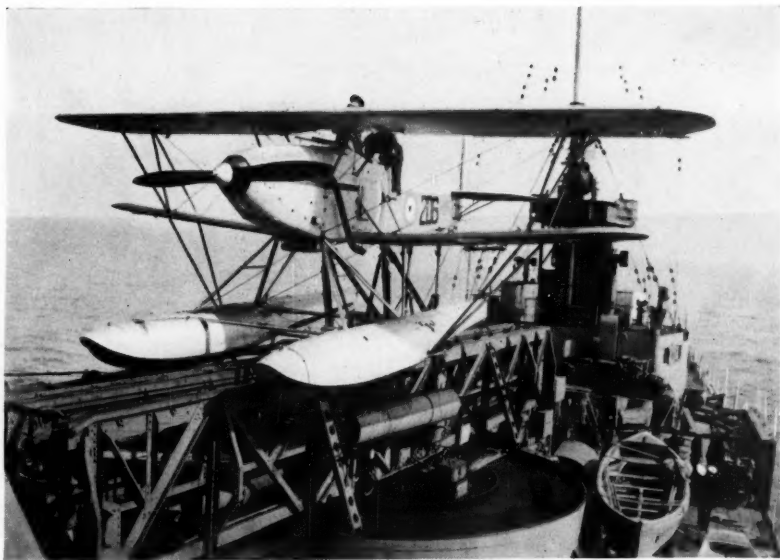
THE DEVELOPMENT OF THE AIRCRAFT CATAPULT

By H. J. C. HARPER, A.M.Inst.C.E.

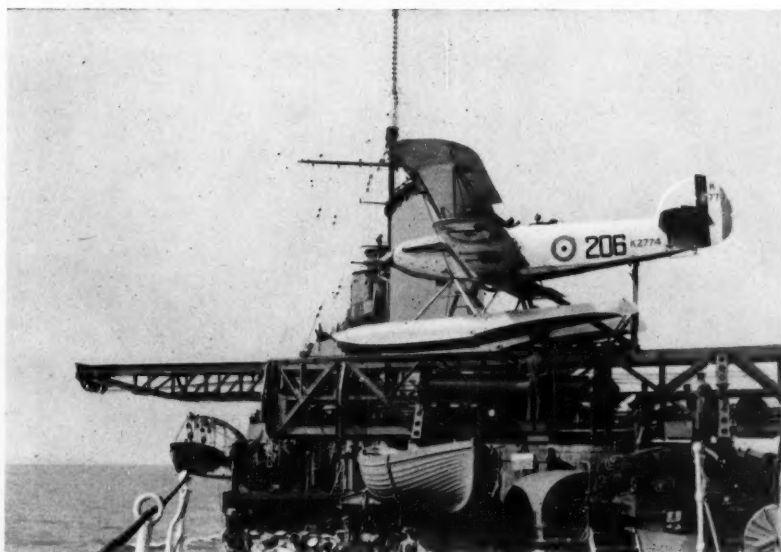
THE use of catapults to launch aircraft was practised at a very early stage in the history of heavier-than-air flying machines. Octave Chanute used a primitive form of catapult in 1896 to launch his gliders when he was carrying out experiments amongst the sand dunes of Lake Michigan. This consisted of two wooden rails, greased with tallow, fixed so as to form an incline. The glider was mounted at the top, and it was drawn down the incline by a rope pulled by several men. By this means sufficient speed was imparted to the glider for it to soar into the air when it reached the end of the runway.

Some years later Professor Samuel Pierpont Langley of the Smithsonian Institute, Washington, who had been conducting experiments in aeronautics, produced a flying machine, but he was faced with the difficulty of getting it into the air. He had fitted a float to his machine but he was unable to obtain an engine of sufficient power to permit of a take-off from the water. To overcome this difficulty he constructed a catapult and mounted it on top of a house-boat moored in the Potomac river. The aeroplane was placed on a trolley which, when it was pulled back to the starting position, compressed a nest of powerful springs; a rope held the trolley until everything was ready for launching the machine, when it was cut. On 7th October, 1903, the first trial was made. Unfortunately the machine fouled the track and was badly damaged. Repairs were carried out and a second attempt was made on 8th December, 1903, Charles Manley being the pilot. Once again the machine fouled the catapult, dived into the river and was wrecked.

When the Wright Brothers, who had been experimenting with gliders for a number of years, turned their attentions to a power-driven aircraft they were faced with the same difficulty of obtaining a light but sufficiently powerful engine. They produced an engine of their own design, but as this only developed 15 horse-power it was obvious that it would not be able to get the aeroplane into the air, even if it might suffice to sustain it in that element. Some source of external assistance was clearly indicated. Possibly the experiments in launching carried

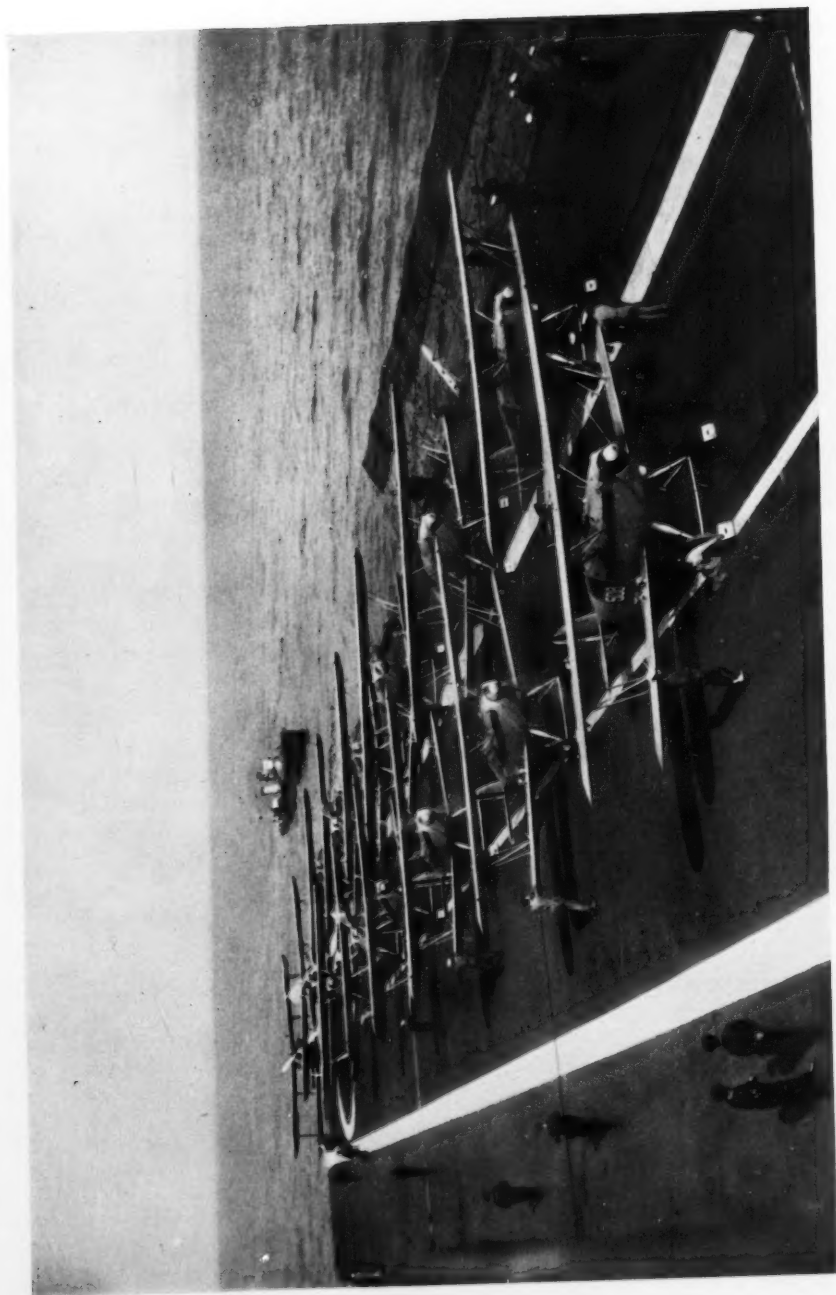


IN THE 'HOUSED' POSITION



IN THE 'LAUNCHING' POSITION
A CATAPULT IN A LIGHT CRUISER

*Photographs by the Editor.
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**THE FLIGHT DECK OF H.M.S. "COURAGEOUS"
AIRCRAFT ABOUT TO FLY OFF**

*Photographs by the Editor.
Published by permission of the Admiralty.*

out by Chanute and Langley had some influence with the Wright Brothers ; in any case, a form of catapult was evolved. This consisted of a monorail track with a tripod erected at the one end. The aeroplane, which was fitted with skids, was mounted on a cross-beam which ran along the track on a pair of rollers. To this cross-beam a rope was attached and led to the forward end of the track where it was taken over a pulley and led back to the base of the tripod. After passing over a pulley at this position and over another at the apex, the rope was attached to a heavy weight. When it was desired to launch the aeroplane it was mounted on the track with the tail nearest the tripod. The engine was run at full power and, when everything was ready, the weight was released ; in falling, this drew the cross-head and aeroplane along the track, so that by the time the end of the run was reached flying speed had been attained. On the morning of 17th December, 1903, the Wright Brothers' machine was launched four times by this primitive form of catapult into winds varying from 20 to 27 miles an hour. It was thus that man at last achieved success in his endeavours to solve the problem of mechanical flight.

In the succeeding years this primitive form of aeroplane was improved upon : wheels were fitted instead of skids, and engines giving greater horse power became available. In consequence of these improvements it became possible for the aeroplane to take off under its own power from any chosen aerodrome. The use of the catapult was therefore discontinued.

It was not until 1909, when several officers were sent to witness flying events, that any official interest in aviation was taken by the United States Navy. Amongst these was Captain Washington Chambers, who visualized the use of aeroplanes for naval purposes. The possibility of flying from the deck of a ship was demonstrated in November, 1910, when Eugene Ely flew off a special platform erected over the forecastle of the U.S.S. " Birmingham." In the following January he successfully landed on a platform erected on the quarter deck of the U.S.S. " Pennsylvania."¹ These flights convinced the United States Naval authorities that aviation was likely to be of use for naval purposes. But here discussion broke out. It was obvious that it would not be possible to erect these large flying platforms on the decks of all warships on account of the interference which would be caused to the fire of the ship's guns. It was felt that the services the aeroplanes could perform in scouting and giving information of the enemy's movements was not of sufficient value to outweigh the sacrifice of gun power.

¹ See "The Development of the Aircraft Carrier," p. 505 of the JOURNAL for August, 1935.

Opinion on the use of aircraft for naval purposes appears to have been divided into two schools: the one maintained that the aircraft should go to sea in a special ship fitted with a large platform—this was the germ of the aircraft carrier of later years; the second school contended that it was essential for the aviator to be an officer of the ship for which he scouted or controlled the gunfire—it was considered that the ship would know the capabilities of the aviator and that he would know the ship's organization and methods and that consequently better co-operation would ensue. Captain Washington Chambers, U.S. Navy, who had sponsored the deck flights of Ely, belonged to this latter school. The development of the hydro-aeroplane, or float-plane as we now style it, opened up possibilities of the use of aircraft in conjunction with ships without the necessity of a large flying platform. Most of the pioneer work in America was carried out by Glenn Curtiss and it was he who in the early part of 1911 set out to prove the adaptability of the hydro-aeroplane for naval use. Captain Chambers considered that with this end in view it was necessary to demonstrate that a seaplane could be hoisted over the side of a ship, take off from the water and at the conclusion of the flight land alongside and be hoisted on board again. Upon the return of the U.S.S. "Pennsylvania" from San Diego after Ely's experiments in landing on the special platform, Curtiss set out in his seaplane, landed alongside and was hoisted in by one of the ships' boat cranes. After a short stay on board he was hoisted out, took off from the water and flew to his base on North Island. This demonstration so impressed the U.S. naval authorities that two seaplanes were purchased from Curtiss.

Difficulty was soon experienced owing to the inability of a seaplane to take off in a rough sea: the floats were of comparatively light construction and were subjected to severe buffeting during the long run necessary to take off with the low-powered engines available. It was found from practical experience that a seaplane could alight on a much rougher sea than it could take off from. It was obvious, therefore, that a method must be evolved by which a seaplane could be launched from the deck of a ship without touching the water. Captain Chambers appeared to have consulted Curtiss and Orville Wright as to the possibility of using a short platform mounted on the gun turret of a battleship and supplementing the normal run to take off by the application of external power. The design of a catapult was prepared and the work of construction was carried out by the U.S. Ordnance Department. Progress was somewhat slow, but by July, 1912, the catapult was completed and mounted on the wharf at Santee Docks, Annapolis. This catapult consisted of a steel framework having two rails, along which a small wooden carriage was pulled by means of a wire rope; this latter,

after passing over a pulley at the front end of the catapult, was attached to the cross-head of a piston working in a cylinder operated by compressed air. The catapult was mounted rigidly on the dock wall and could not be trained. The seaplane and the carriage were both free to lift from the rails at any time during the firing stroke. On 31st July, 1912, the first attempt at launching a seaplane by means of this, the first power catapult, was made by Lieutenant T. G. Ellyson, U.S. Navy. Everything being in readiness, the engine of the seaplane was opened full throttle and the compressed air supply turned on. The carriage with the seaplane commenced to move with increasing speed. At the middle of the run the machine commenced to get flying speed, the front part of the float rose off the carriage while the rear part remained in contact and still continued to be accelerated. Under the combined action of this force and a cross wind, which had sprung up, the right wing was thrown up, the machine left the carriage and dived into the sea. Fortunately neither the pilot nor the machine was much the worse for the plunge, and it was found that the structure of the latter had not been in any way strained by the accelerative force. Ellyson was also able to state that he had not experienced any ill effects from the rapid acceleration. This information was most valuable as there had been a good deal of discussion as to whether the pilot would lose consciousness from this cause. Another very important lesson was that provision had to be made for securing the carriage to the track and also the aeroplane to the carriage so that neither could rise, with an arrangement for release of the aircraft when the end of the track was reached.

Lieutenant-Commander Holden C. Richardson, U.S.N., undertook the development of the original crude design, and subsequently a much better catapult was constructed at the Washington Navy Yard. Reverse flanges and small wheels held the carriage down on the track and the seaplane was secured to the carriage by iron straps which were automatically released at the end of the run. The end of the runway, which was thirty feet long by three feet wide, was curved upwards so as to throw the machine into the air at the moment of release. On 12th October, 1912, after a load of sandbags had been successfully catapulted, the seaplane was placed on the carriage. Lieutenant Ellyson once more took his place at the controls and achieved the distinction of being the first pilot to be successfully launched by a power catapult. A speed of nearly 40 m.p.h. was reached in a period of $1\frac{1}{2}$ seconds when the carriage reached the end of the runway. The average acceleration was 56 feet per second or one and a half times that due to gravity (i.e., 1.5). Further trials proved the catapult to be reliable, and it was decided to investigate the possibilities of operating such an apparatus on board a ship.

A redesigned catapult of increased length was constructed with a

view to launching larger and heavier aircraft. This catapult was completed about the end of 1913 and was sent to the naval air station which had just been opened at Pensacola, Florida. Owing to the various other calls on the station, very little was done to develop it until early 1915; but in that year the apparatus, after modification, was installed in a barge. A Curtiss flying boat was successfully launched by it, Lieutenant Bellinger, U.S.N., being the pilot. A further series of experiments were carried out and it was decided to install a catapult in the U.S.S. "North Carolina." This was reduced in length to permit of it being mounted on the quarter deck; it had a track of 65 feet. Experiments were commenced in the late summer of 1915, Lieutenant-Commander Mustin carrying out several successful launches. During an attempt to use the catapult with the ship under way, the seaplane struck the water and capsized; but in February, 1916, this was accomplished by Lieutenant-Commander Mustin in a Curtiss flying boat.

Considerable trouble was experienced with the launching carriage and its braking arrangements during the experiments with these early catapults. Fortunately the many mishaps did not involve injury to personnel. Several of the early carriages were constructed of wood with wire bracing, in an effort to keep down the weight and thereby reduce the braking force. For some time the carriage was permitted to continue and go overboard, a cable being attached to prevent its loss. During one of the first launches from the U.S.S. "Carolina," the carriage spread outwards and came loose from the track. As the aeroplane gathered speed it lifted the carriage clear of the catapult, and consequently missed the releasing device. It was launched into the air with the carriage and cable attached, and the flight came to an abrupt end as the cable tautened, the aeroplane disintegrating as it hit the water. Fortunately the pilot's belt broke and he was thrown over the top plane into the sea, unhurt.

Similar catapults to that in the "Carolina" were installed in the U. S. ships "Huntington" and "Seattle" during the early part of 1916, and experiments were continued intermittently throughout that year and into 1917. In October, 1917, the "Huntington" was ordered to escort troop ships to Europe and made the crossing of the Atlantic with two planes mounted on the catapult, each with two 50-lb. bombs fitted. The aeroplanes were kept ready for immediate action with engines warmed up, but neither on the outward voyage nor on the homeward passage were enemy submarines sighted; consequently the aircraft were not catapulted. Many of the senior naval officers were not favourably disposed towards this catapult because it restricted the field of fire

of the guns of the after turret, and it was removed when the "Huntington" returned to the United States.

Owing to the pressure of wartime demands the further development of catapults on board ship were left in abeyance. But when the United States had once again settled down to peacetime conditions it was decided that experiments should be resumed. The early types of catapults had all occupied a considerable space, and it was necessary that the apparatus should be made more compact so that little or no obstruction to the guns would remain after the aeroplane had been launched. Commander Kenneth Whiting put forward a scheme for a rotatable type of catapult which could be trained in any required direction so that the seaplane could be launched directly into wind. This was designed to launch a 3,500 lb. aircraft at a speed of 55 miles an hour. A plough brake was fitted at the forward end of the track so that the carriage could be brought to rest and would not run off the end of the track. The new catapult was installed in a lighter for tests, and the first launch was successfully carried out on 26th October, 1921. Upon completion of a series of tests, the apparatus was mounted on the quarter-deck of the U.S.S. "Maryland" in the following year, and used successfully during the fleet manoeuvres. As a result of the experience gained during these exercises it was decided to fit catapults in a number of ships, and by the end of 1925, thirty-two catapults of this type had been installed in various U.S. battleships and cruisers. During this period a flywheel type of catapult had been evolved to the design of Mr. Carl Norden. This was capable of launching an aircraft of an all-up weight of 10,000 lb. Catapults of this type were installed in the U.S. aircraft carriers, but it is understood they have not been used to any great extent.

In the course of 1921, investigations were commenced by Lieutenant E. F. Stone, U.S.N., and Mr. Carl Jensen into the possibility of using gunpowder as the propellant in catapults. It was considered that by using a slow-burning powder to force the piston along the cylinder, instead of compressed air, greater simplicity would result, delay owing to the time taken to recharge the reservoirs would be obviated, and there would be no air pipes to leak or to be shot away. By making up charges with definite weights of powder, the pressure in the cylinder when the charge was fired could be determined accurately. The construction of a catapult of this type was completed in 1923 and was mounted on the gun turret of the U.S.S. "Mississippi." The catapult was trained into the wind by rotating the turret; it consisted of a girder framework some 50 feet long and a cylinder in which moved a piston connected to the launching carriage through a system of wire ropes and

pulleys. The powder charge was fired in an explosion chamber communicating with the cylinder through a pipe. The carriage and other moving parts were brought to rest by means of hydraulic and spring buffers. The speed of launch was about 50 m.p.h.

The results of the trials of this catapult were considered to be highly successful, and the naval authorities decided that all future catapults should be of this type. This decision was greatly influenced by the late Admiral Moffet, who did so much for American naval aviation. The importance attached to catapults can be gauged by the fact that, at present, approximately a hundred are installed in ships of the U.S. Navy. Most battleships and cruisers have two catapults and carry from four to eight aeroplanes, mainly of the Vought-Corsair, single float, two-seater reconnaissance seaplane type.

Progress in the development of the power catapult was not so rapid in this country as in the United States of America. This was mainly due to there being more pressing needs in other directions. Early in the War the need of aeroplanes for naval purposes was appreciated. A number of merchant ships, such as the "Ark Royal," "Empress," "Engadine," and "Ben-my-Chree" were taken over and converted into seaplane carriers; but in these the seaplanes were hoisted out by means of cranes and took off from the water.

In the case of the "Campania" a scheme of flying off seaplanes from a special flying deck, built over the forecastle, was developed. The first machine to be operated from this deck was a Sopwith Schneider seaplane which, piloted by Flight Lieutenant W. L. Welsh, was flown off successfully on 6th August, 1915. Wheels were fitted to the floats and when the aircraft was in the air the former were dropped into the sea. This flying-off deck was subsequently lengthened, and on 3rd June, 1916, a Short two-seater seaplane was flown off for the first time. This feat was afterwards repeated a number of times. The length of run required to get off with a relative wind (composed of the natural wind plus the speed of the ship steaming directly into the natural wind) of 30 knots was about 120 feet. In later experiments the seaplane was mounted on a trolley, the tail being held up and guided for the first portion of the run by a special trestle support.

The need for offensive action against the Zeppelins led to the development of the system of flying off single seaters from platforms erected on light cruisers and on the gun turrets of capital ships. It had been found that the speed and climb of the seaplanes was not sufficient to enable them to bring the enemy airships to action; but this system of launching aeroplanes had the disadvantage that it caused a certain amount of interference with the ships' guns in many cases. Hoisting

seaplanes out from the carriers had the serious disadvantage that the ship had to slow down or stop, thereby making her an easy target for a torpedo from a lurking submarine. Also, if the sea were at all rough, the seaplane could not get off the water and ran the risk of sustaining serious damage. Flying off seaplanes by means of a trolley was not altogether satisfactory as it necessitated a long runway for a heavy machine and also fast steaming into a fairly strong natural wind. Efforts were made therefore to find a method of launching aircraft which would not have such disadvantages.

It was known that the United States Navy had been successful in launching seaplanes by means of power catapults, and in July, 1916, a specification was prepared and tenders invited for the construction of a catapult in this country. The method of operation was not laid down, but it was stipulated that the catapult should be as light and as compact as possible, and that it should be capable of launching an aircraft of 5,600 lb. weight at a speed of 60 m.p.h., which had to be obtained in a distance of 60 feet. Several tenders were received but only two types of catapults were completed and tested. Both of these were operated by compressed air and were on similar lines to those of the U.S. Navy. The first was built by Messrs. Waygood and Otis to the design of the late Mr. R. F. Carey, and erected in a pit at Hendon aerodrome. The test launches were made in October, 1917, with a Sopwith "Pup" aeroplane. The other catapult was constructed by Messrs. Armstrong-Whitworth and was installed in a hopper barge. Tests were carried out early in 1918 off the Isle of Grain. A number of launches were made with both these catapults, but in neither case was the specified performance attained with regard to load and speed. The cessation of hostilities in November, 1918, brought the experiments to an end for the time being.

It was not until the autumn of 1922 that it was decided to recommence catapult experiments. The new specification called for a launching speed of 45 miles an hour to be attained in a distance of 34 feet, the weight of the aircraft not to be greater than 7,000 lb. Two catapults were put in hand: one was built at Chatham Dockyard to the design of Mr. R. F. Carey and was similar in many respects to the one tested previously at Hendon, but with a reverse reeving of wire ropes over pulleys to bring the trolley to rest after it had reached the end of the launching run. The second, which was designed and built at the Royal Aircraft Establishment, Farnborough, differed from all other types as ropes and pulleys were dispensed with, the launching trolley being attached directly to the first of a series of telescopic rams which were pushed out simultaneously when compressed air was admitted into the main cylinder behind the rearmost ram.

The Carey catapult was installed in H.M.S. "Vindictive" in the autumn of 1925. To make the necessary provision for this the forward guns were removed and a hangar capable of accommodating four seaplanes was built in front of the bridge, the catapult being mounted on top of the hangar. A crane was provided for lifting the seaplanes out of the hangar and placing them on the catapult and also for hoisting them in after they had alighted and taxied up to the ship. The tests carried out were a complete success, and during the two subsequent years when the ship was on the China station, the catapult proved entirely satisfactory. A similar catapult was afterwards fitted in H.M.S. "Resolution."

The first R.A.E. catapult was installed in a pit on the common at Farnborough in 1924, and since that date it has been used extensively for development work and for testing the suitability of aircraft for catapulting. A total of something like 5,000 launches have been made with it, and it has been used extensively for testing cordite as an alternative to compressed air. A similar catapult was installed in H.M.S. "York," this being the first cordite catapult to be fitted in a ship of the Royal Navy.

As a final speed of 45 m.p.h. was found to be insufficient to launch higher speed aircraft when there was little natural wind, two further multiple-ram type catapults capable of giving a final or launching speed of 55 m.p.h. were designed and made at the Royal Aircraft Establishment. One of these was capable of launching an aircraft weighing 5,000 lbs., and the other an aircraft weighing 8,000 lbs. In order to reduce the stowage length, the forward part of the structure was arranged to swing back on hinges and lie alongside the rear half when the catapult was not in use. These catapults were 82 feet long extended, 44 feet folded; the launching run was 50 feet. Cordite was used as the propellant in both cases. The former type was installed in H.M.S. "Kent" and the latter in H.M.S. "Hood."

Another interesting catapult, of which a number have been put into service, is the "Forbes" extending type, built by Messrs. MacTaggart Scott. This was designed to launch aircraft up to a weight of 8,000 lbs. at a speed of 57 m.p.h., the average acceleration being 2.15 g. and the launching run 50 feet 6 inches. The method of reducing the extended length of 75 feet 9 inches to 46 feet when closed for stowage is very ingenious. The structure which forms the runway for the launching trolley consists of three parts: the main middle structure, the forward, and the rear extending portions. The two latter are similar, and each is half the length of the middle portion. The extending portions slide into the main portion when the catapult is in the stowed position. The system of wire ropes and pulleys are so arranged that no alteration

takes place in the tension of the ropes during the closing or extending of the structure.

Another type of catapult in use in a number of British ships is the Slider, built by Messrs. Ransome and Rapier. This consists of a main structure along which is propelled in the usual way by a system of wire ropes in conjunction with a ram a subsidiary structure or slider. Mounted on the slider and travelling along it in turn is the launching trolley. A wire rope, one end of which is attached to the trolley, passes over a pulley carrier at the end of the slider and thence to an anchorage on the main structure. Reversed cable and pulley systems, both in the case of the slider and the trolley, are used for retardation purposes in the usual way. For stowage purposes the slider rests entirely on the main structure.

When introducing the Naval Estimates this year, the First Lord of the Admiralty stated that "twenty-nine capital ships and cruisers are fitted with catapults and thirty-seven aircraft are embarked in the vessels so fitted."

It is interesting to note that catapults have not been confined to surface craft; one of the Carey compressed-air type was fitted in 1927 in Submarine "M.2." The Parnall "Peto," a small two-seater seaplane specially designed for stowage in a confined space, was used for the experiments which were very successful. The unfortunate sinking of that submarine brought the experiments to an end.

An entirely different form of catapult has been developed at the Royal Aircraft Establishment and was demonstrated at the Royal Air Force Display of 1931. This was designed to enable an aeroplane of a maximum weight up to 18,000 lb. to attain a speed of 60 m.p.h. in a run of 120 feet, the average acceleration being 1 g. (i.e., 32 feet per second, per second). With this system the aeroplane is hauled across the aerodrome on its own wheels by means of an attached cable (the accelerating) which is led over a pulley fixed in the ground some 180 feet away, thence to a revolving drum driven by a pair of spheroidal compressed air engines capable of developing 4,000 horse-power at 2,500 revolutions a minute. The tail of the aeroplane is supported on a trolley which is also attached to the accelerating cable. Another cable (the retarding), one end of which is attached to the upper half of the drum, is paid out as the accelerating cable is wound in. This retarding cable is attached at its other end to the tail trolley and to the accelerating cable. When the end of the launching run is reached, the power is cut off and the brake fitted to the drum is applied, thereby bringing the retarding cable into action and arresting the forward motion of the trolley and accelerating cable. The attachment to the aeroplane is released at the end of the launching run, and the aircraft having attained flying speed, takes off

under its own power. The possibilities of land catapults such as this in getting heavily loaded civil or military aeroplanes safely into the air from aerodromes where there is little run available for a normal take-off, is obvious.

Other countries, notably France, Germany, Italy, and Japan, have also developed catapults. These have to a very great extent followed very closely along the lines of the original American design, i.e., the usual system of wire ropes and pulleys used in conjunction with a single ram.

The Swedish aircraft-cruiser "Gotland," which visited Gravesend last February, has stowage accommodation for eleven Osprey seaplanes on tracks like railway sidings abaft the funnels. Each machine is mounted on a catapult-launching trolley, and when it is desired to launch one the trolley is driven onto a catapult by its own motor and connected up to the launching mechanism. By this system the aircraft can be launched at intervals of about ten minutes.

In general, it may be said that the catapult has now reached such a state of development that it is regarded as being just as much part of a battleship's or cruiser's equipment as guns or torpedo tubes. By its adoption each ship is able to carry one or more seaplanes for reconnaissance purposes or for controlling the fire of its guns.

The use of catapults has not been confined to naval vessels, but has been extended to passenger liners in order to speed up the delivery of the mails between Europe and America. The French liner "Ile de France" was the first merchant ship to have a catapult installed, and in August, 1928, when four hundred miles from New York, a flying boat was catapulted from her deck and safely delivered the mail. Several similar flights were made which proved the practicability of the scheme, but unfortunately the French line was compelled to suspend the service owing to lack of funds. In 1929 the Norddeutscher Lloyd steamship company entered the field with equipment and personnel chartered from the Deutsche Luft Hansa air line and commenced a regular service from their liner "Bremen." The catapult was mounted on the top deck between the two funnels on a pedestal about which it could be rotated and so enable the seaplane to be launched directly into the wind without altering the course or speed of the ship. The success attained with these experiments caused the Norddeutscher Lloyd company to install a similar catapult in their new liner "Europa." By 1931 both the "Bremen" and the "Europa" were equipped with seaplanes and catapults, and since that date a fast weekly mail service between the United States and Europe has been operated during the summer months. The seaplane is catapulted about six to eight hundred miles from land, and delivery of the mail has been speeded up so as to effect a saving of time of from twenty-four to forty hours.

THE ROMANCE OF PREVENTIVE MEDICINE

By MAJOR-GENERAL W. P. MACARTHUR, D.S.O., O.B.E., M.D.,
D.Sc., F.R.C.P.I., K.H.P.

On Wednesday, 12th February, 1936

LIEUTENANT-GENERAL SIR JAMES A. HARTIGAN, K.C.B., C.M.G.,
D.S.O., M.B., D.Ch., K.H.P., in the Chair

THE CHAIRMAN introduced the Lecturer.

LECTURE

(NOTE.—*Considerations of space have necessitated a somewhat abbreviated report of this Lecture.*—EDITOR.)

I WANT to avoid, as far as possible, the traditional lines of medical lectures to combatant troops, and I think it may be instructive, possibly even interesting, if I take as my text something of the history of typhus fever: a disease which has destroyed more fighting men than all other diseases and enemy activities put together. It has been the deciding factor in many a campaign, and although to-day it is practically extinct in Great Britain, it remains a menace in war and I do not doubt that the staffs of any armies which envisage association, either as friends or as foes, with troops from Eastern Europe will include in their calculations the certainty of typhus fever.

As I am addressing primarily non-medical officers, I would ask you not to confuse typhus fever with typhoid or enteric. Typhoid or enteric is a disease acquired by swallowing the germ in infected food or water. Typhus fever is an entirely different disease, much more deadly, and is conveyed from person to person by infected lice, these insects being quite harmless until they have fed on someone suffering from the disease. The name "typhus fever" is a comparatively modern one. In old records the disease appears under a large number of different names; some were derived from its distribution—such as "jail fever," "camp fever," "ship fever," "hospital fever," or, from the rash, it was called "spotted fever"; and it was also known as "famine fever," because there has never been a famine in Europe which has not been accompanied by an epidemic of typhus fever, even more terrible than

the initial famine. Some of these old names are curiously misinterpreted to-day. In John Buchan's magnificent *Life of Oliver Cromwell* you may remember that the epidemic which prostrated Cromwell's Army in Ireland, carrying off a large proportion of his officers and men and not sparing even the person of the Lord Protector himself, is referred to as an Irish form of malaria. It is clear that Buchan came across in some contemporary record the old expression "the Irish ague"; but the Irish ague was not malaria of any kind but typhus fever. There is the same use of the word in Shakespeare's *Macbeth*, where Macbeth, defying his enemies before the castle at Dunsinane, says: "here let them lie till famine and the ague eat them up."

CAUSE OF TYPHUS

I mentioned that typhus fever is conveyed by lice—the only insects which are true parasites of man. Various insects attack him in a predaceous manner, but these lead an independent existence. Lice, however, are entirely dependent upon man for everything—their carriage, their food, their temperature—and they cannot live away from him. Separated from their human host they are like a man who falls into the sea: he may remain alive for a time, but before long, unless he is rescued, he certainly will perish. Lice cannot jump or fly, so they are transmitted from person to person by close contact. Shakespeare says of this insect: "it is a familiar beast to man, and signifies love," but to-day any personal familiarity with lice, whether acquired through love or otherwise, would be accounted scandalous. I know people who are so excessively refined that they would not be willing to quote the lines about seeing ourselves as others see us if they realized that the quotation is from a poem entitled: "To a Louse, On seeing one on a Lady's Bonnet in Church." Why is there this curious reticence about the subject? It is simply because it is such a short time, historically speaking, since we were all liable to be lousy that we are still rather touchy about it. The subject of capital punishment would not be popular among the relatives of a man who has been hanged, and so with us the subject of lice is still rather a delicate one and we prefer to leave it alone. We did not always suffer from this extreme delicacy and mealy-mouthedness. Why did the ladies of the Tudor court carry little curry-combs with which to scratch their backs? Why did the gentlemen of Stuart times shave their heads and wear wigs—not always with the desired object, for Samuel Pepys notes sadly in his Diary that he has examined his new periwig and found it full of nits.

Before I deal with the subject of typhus fever in the fighting forces, it is necessary to speak about typhus in the general population and also

in the jails—the two sources of recruitment. With regard to the general population, you all know of the great Irish famine of 1848 and the terrible epidemic of typhus that accompanied it, which carried off about half a million people. Similar epidemics of typhus occurred in England from the earliest times always with the same sequence of events: failure of the crops, famine, and fever. Conditions were so terrible that we find one old chronicler exclaiming in despair: "The hand of God has been lifted against the people of Christendom." With the improved economic conditions during the XVIth century these famine fevers in England became less intense and less extensive, but the disease still persisted, always ready to break out into prominence in times of shortage and distress, as, for example, during the years of severe economic depression after the Napoleonic Wars, and during the cotton famine at the time of the American Civil War, that being the last big flare-up of typhus in England. As I have said, typhus is practically extinct in England to-day. That is one of the reasons why we escaped it on the Western Front during the War—there was no spark to fire the powder magazine. Another reason was the excellent arrangements made by the Germans. When Russians, Austrians, and Rumanians were dying of typhus in heaps, and the Germans were moving regiments backwards and forwards, their arrangements for preventing the spread of typhus to their troops in the West never failed.

TYPHUS IN JAILS

With regard to the jails, there is ample evidence that from the time of their foundation they were hotbeds of typhus. Indeed, from the accounts that have been left us by John Howard and others, one could almost imagine that the English prisons were founded and maintained solely for the propagation of that disease. John Howard, who himself died of typhus, was appointed High Sheriff of Bedfordshire in 1773. His proposal to replace the jailers' fees by fixed salaries was rejected for want of a precedent—an official procedure not unheard of to-day. Accordingly he visited several prisons elsewhere in the hope of finding the precedent he required. He was so moved by the horrors he found there that he abandoned his original plan and continued his itinerary throughout the country, finally embodying the ghastly details of this inquisition in his report on "The State of Prisons in England and Wales." The whole prison system was rotten from top to bottom. Many of the jails were private property, rented by the jailers, who reimbursed themselves by fees extorted from the wretched prisoners, and even in the State prisons the jailers adopted the same means of livelihood. Prisoners were loaded with chains, so that the jailers could extort bribes for "easement of irons," and even those prisoners who

were found not guilty were sent back to prison until all the jailers charges had been met. The prisons were shamelessly overcrowded and indescribably filthy. The jailers used to escape liability for the window tax by the simple expedient of building up the windows. Many of the prisons were underground dungeons without light or heat or bedding, the wretched prisoners huddling together for warmth on bundles of rotten rags and filthy straw. Many of the jailers refused to accompany Howard into the prisons in their charge because of the fever raging there, and at Exeter the prison surgeon was expressly exempted by the terms of his contract from visiting prisoners in the dungeons who were suffering from jail fever. Howard says, too, that often after leaving a prison his clothing emitted so vile a stench that he found it impossible to remain in his closed coach, and was forced to continue his journey on horseback in the fresh air, and even the flask of vinegar which he carried as a disinfectant became, in his own words, intolerably offensive. Many of these prisoners, you must remember, were untried, and sometimes they lay in prison so long that when at last they were brought to trial all the witnesses had been lost sight of or were dead. Sometimes, after years of hope deferred, a prisoner would be carried into court and propped up in the dock, dying on his feet of jail fever. Sometimes these wretched men would make as triumphal an exit from this world as the blinded Samson made when he prayed to be strengthened "this once," and bowed himself on the two pillars of the house, and took with him on his long journey a whole host of the lords of the Philistines; for every now and then the prisoners would infect the court with jail fever and there followed one of the "Black Assizes," which are still remembered in the ritual of the courts, for the underlying idea of the bouquet of flowers carried by the judge is to protect him from the supposed emanations of jail fever. No account of typhus in this country could omit some mention of the Black Assize of Oxford in 1577. In that year there lived at Oxford a certain bookbinder, Rowland Jencks, who was a firm adherent of the old religion. Evidently he was not over tactful, for his indictment declares that he made it his "chief employment to vilify that Government now settled, profane God's Word, speak evilly of the Ministers, and absent himself from Church." Scandalized by these goings-on, the University committed Jencks to prison, to stand his trial at the forthcoming assizes. These commenced on 4th June, and a few days before that date there is the ominous record that several of the prisoners in Oxford jail had died in their chains. Owing to the interest taken in the case, the court was crowded, and before a large assemblage, Jencks was condemned to have both his ears struck off, a sentence duly put into execution. Ten days later jail fever broke out. The two judges, Sir Robert Bell, the Lord Chief Baron,

and Sir Nicholas Barham, died ; so did the High Sheriff and the Under Sheriff, six Justices of the Peace, and all the members of the Grand Jury except two. Within a period of ten days one hundred members of the University died, every College and Hall being involved. The total recorded mortality amounted to five hundred and ten.

DYSENTERY AND DETTINGEN

Just as typhus earned its title of "jail fever," so it earned equally well its titles of "camp fever" and "ship fever." Writing in 1757, Lind says that typhus is the "most fatal and general cause of sickness in the Royal Navy," and that in the war just ended the mortality from it "was greater than by all other diseases and means of death put together." Indeed, from the time when typhus becomes identifiable in the clinical accounts, we find it a practically invariable concomitant of naval and military operations, provided that these were sufficiently prolonged, and when epidemics of some other kind broke out typhus usually was engrafted on the original infection. There was a good example of this during the great epidemic of the "bloody flux," that is, dysentery, after the battle of Dettingen in 1743. I do not set up to be an authority on military history, but I have a grievous complaint against military historians as a class, and that is that they usually omit all mention of medical affairs, which often were of a greater and more far-reaching importance in deciding the fate of a campaign than half the battles that were fought. I have read the account of the battle of Dettingen in several military histories, and, taking them as a whole, they are utterly misleading. One finds spirited descriptions of manœuvring, attacks, and counter-attacks of the infantry, dashing charges of the cavalry and perhaps even of the vagaries of the royal chargers, when King George was run away with to the front, and the Duke of Cumberland to the rear. If these were the only sources of my information, I should imagine that after the battle the English army, having rested and refitted, would have been able to march off, "all so bold and gay, to fight the French in the morning." They could not have fought the French in the morning, and they could not have fought the French in the evening either. They could not have marched ten miles, and, if such a force had existed, the whole British army would have surrendered to two troops of Boy Scouts. I will tell you what happened. The army, in very hot weather, did a series of long marches and finally encountered the French at Dettingen on a hot June day. Before the battle commenced two companies of Howard's Regiment were detached to act as baggage guard. The battle was a very bitter one, and finally the English remained in possession of the field. In the evening, the weather, which had been

very sultry, broke and became bitterly cold and wet. The troops lay out in the mud all night, soaked to the skin. In the morning it was decided to abandon the ground won and they retreated and handed over 2,000 wounded to the French. The next day the troops marched in the pouring rain to Hanau, where again they lay out in the mud. Dysentery broke out, 500 men were attacked, and before long half the army was down. An interesting point is this: the companies that were acting as baggage guard had the same water and the same food as the rest; the only difference was that they did not have the fatigue of the others, but had tents and fires, and wagons to ride in, and they had no dysentery. The sick were crowded into Feckenheim and, just as the doctors knew would happen, typhus broke out with an appalling mortality amongst the sick, exhausted by dysentery. More than half the troops died. With a few exceptions, all the medical staff were attacked, and over one-third of these died also. "The inhabitants of Feckenheim," says Pringle, who was there, "having received from the troops first the flux and after that the fever, were almost utterly destroyed." Next, orders were received to remove the surviving sick from Germany to Flanders, and to the number of some 3,000 they were put on board boats for transport to Ghent. On the voyage typhus rose to such a pitch of virulence that more than half of the men perished and the epidemic continued to rage after the arrival of the troops in Ghent. And that was the lamentable end of the heroes of Dettingen.

In Ghent there was a small but interesting extension of the epidemic. Old tents which some of the unfortunate wretches had used as bedding on the voyage were sent to a tradesman to be repaired, and they were swarming with hungry lice. Twenty-three men were employed on the work; every one of them went down with typhus, and only six recovered.

Up to the time of the campaign against the Highland Jacobites in 1746, jail fever, camp fever, and hospital fever were regarded as being probably the same disease; the symptoms being recognized as identical in every respect. This, however, had never been demonstrated on any large scale until an outbreak in the Duke of Cumberland's army put the matter beyond dispute. A French ship, which was bringing help to the Scottish Jacobites, was captured off the English coast, and on board were found a number of Highland deserters who, in Flanders, had gone over to the French in the hope of reaching their clans out in arms for Prince Charles in Scotland. These deserters were thrown into prison in England until there was an opportunity of sending them to Inverness for trial by court martial. Finally, to the number of thirty-six, they were put on board a ship which was conveying Houghton's Regiment to Nairn. Some of these Highland deserters were suffering from jail fever

contracted in the English prisons, and within a few days of landing at Nairn two hundred men of Houghton's Regiment went down with jail fever. They infected the camps, the camps infected the hospitals, and the disease spread far and wide in Inverness—all the familiar sequence of events, but in this instance arising in the first place from jail fever.

Owing to the continual wastage, it was fortunate for the English people that their Government had at last adopted the plan which Forbes of Culloden, the Lord President, had been urging on them for years, i.e., widespread recruiting in the Scottish Highlands. During the four campaigns which occurred about this period, besides thirty-six battalions of militia and reserves, there were raised in the Scottish Highlands fifty regular battalions of the line; and it is distressing to think how many of these fine fellows were to meet with such needless deaths.

Press gangs, sent out broadcast, far exceeded their legal powers, even though those would seem outrageous to us to-day. Thousands of Irish peasants who had assembled, according to themselves, to help one another to dig the potato crop and get in the harvest were rounded up by the authorities, on the pretext that they were engaged in seditious assembly, and drafted to the Fleet, until, as that cautious and precise historian Lecky pointed out, half the sailors in the Royal Navy were native Irish peasants.

RECOMMENDATIONS OF JAMES LIND

Who were responsible for this long-continued horror—the doctors who did not know or the executive officers who would not listen? I will tell you what the doctors knew at that time, and then you can judge for yourselves. Remember that the disease is carried by lice. The doctors knew and pointed out that typhus fever could be contracted only by close contact with a sick man or with clothing, bedding, and so forth, which he had contaminated. They knew that patients suffering from typhus fever, who were thoroughly cleansed and given fresh straw could be nursed amongst others without risk of contagion, and they knew that when such measures could be instituted and maintained the disease would not break out. Relying on such precautions during the Seven Years' War, Donald Monro nursed the typhus cases in the Coldstream Guards among his other patients without any spread of the disease, and after leaving the army he introduced the same procedure into St. George's Hospital, London, with complete success. James Lind, the naval surgeon, even considered and discussed the possible role of lice as vectors of the disease, 160 years before his time. His recommendations for the eradication of typhus fever could not be bettered

to-day, and had they been adopted they could not have failed to stamp out the disease. He advised the Admiralty to provide depot ships where all men, particularly those from jails, were to be detained; here they were to be thoroughly cleansed and given fresh outfits. If their own clothing was worth preserving it was to be sterilized by heat. "No infection," he wrote, "can withstand the heat of an oven." The men were to be detained on these ships until the incubation period of typhus had passed, lest they should have been infected before they came, and then they were to be drafted to the fleet. Had Lind been heeded, the Navy would have escaped the appalling epidemics of ship fever during the successive French and American Wars, when the fleets came into the Channel ports and landed so many thousand cases of ship fever that one wonders how the history of Europe might have been altered had these men escaped. There was no excuse for the neglect, because one officer, Captain Arbuthnot of H.M.S. "Terrible" adopted Lind's recommendations in so far as they were applicable to a single vessel. He cleared his ship of typhus and kept it clear, and gave Lind permission to report the whole affair; but, so far as any official action resulted, Lind was only a voice crying in the wilderness. Typhus continued to rage in the Navy for another half century, in conditions which Smollett, the novelist and naval surgeon, described when he wrote: "It is surprising, not that the sick should die, but that any of them should recover."

I hope the moral which has been running through my address has been sufficiently clear. It is that the combatant officers of a unit are responsible for the health of the men, and not the medical officer, who is only advisory—though too often in the past when something has gone wrong the medical officer has been made the scapegoat for the neglect of others—and also that it does not matter how wise counsel may be if it is not put into effect. James Lind gave the authorities advice which could not be improved upon by all the scientists of to-day in conclave assembled; but he could not move them. Only one thing outside God's Heaven could have moved them, namely, over at Marble Arch—then called Tyburn—a whole row of gallows fifty cubits high, and some kind of an official dangling from each of them.

One other point which I want to stress is that the smarter, the more efficient, the more soldierly a unit is, the more anxious it will be to co-operate with the medical branch in measures to preserve its health. I learned that very early in my service.

In olden days the people of this country were so filled with wonder at the majesty and mystery of the sun that they erected huge temples in its honour, some of which may outlast Westminster Abbey. But

to-day if the ordinary Englishman ever thinks of the sun at all, it is only to grumble at it for not shining enough. When I was young, aeroplanes and wireless would have seemed the stuff that fairy tales are made of, but to-day they have become commonplaces. So too with the great achievements of preventive medicine; they have become part of the established order, and all the labour and devotion and sacrifice that went to make them possible are forgotten. To an ordinary Englishman in the present day the great epidemic diseases—typhus, bubonic plague, small-pox—are mere abstractions, nebulous and utterly remote; but his ancestors lived in terror of them. One cannot read old diaries or personal records without feeling the writers' preoccupation with such diseases; not because they were interested in them as a doctor of medicine might be, but because they could not get away from them. People in those days resembled the inhabitants on the slope of a slumbering volcano, who watch with trepidation every puff of smoke, not knowing at what moment the whole of their world will go up in flames. Take small-pox: that fell disease took a heavy toll which did not even spare the reigning family. Shortly after the Restoration, Charles II's brother, the Duke of Gloucester, succumbed to it; it also carried off his sister, the Princess Royal, later in the same year. Their brother, James II, more fortunate in his own person, just escaped with his life, but he lost his eldest son and his youngest daughter from the disease. His rival, William III, suffered grievously from the prevalent scourge, which robbed him first of both his parents and then of his wife, Queen Mary. And, although the records are not very clear, I think it was small-pox which carried off the Duke of Gloucester, the only surviving son of Queen Anne, and, through his death, brought the present Royal Family to the throne.

Take bubonic plague: Samuel Pepys, in the early summer of 1665, walking in Drury Lane, noticed to his horror several houses shut, the dread red cross on the doors, and "Lord have mercy upon us" writ up. Recording this in his Diary, he adds the prayer: "God preserve us all." Pepys had good reason for his foreboding, for by the end of August the plague was raging with its fullest fury in the City, and we find him writing to a friend, that he has remained in London until the plague deaths have reached 1,000 in the day; till the streets are almost deserted and little noise heard there night or day but the tolling of bells; till whole families have been swept away; till the nights, though much lengthened by the season of the year, have grown too short to conceal the burials of those who died the day before; lastly, "till I could find neither meat nor drink safe, the butchers being everywhere visited, my brewer's house shut up, and my baker with his whole family dead of the plague."

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During the late War, if some of the great commanders of the past, Marlborough or Peterborough or Sir John Moore, could have made a breach in Eternity, what they would have found most wonderful would not have been the increase in gun fire, the aeroplanes or the tanks—though those would have seemed marvellous enough—but rather the fact that a large army could go on in occupation of the same ground month after month, year after year, and not be devoured alive by dysentery and typhus. That is what I mean by “the romance of preventive medicine.”

DISCUSSION

LIEUTENANT-GENERAL SIR HARRY KNOX : I feel that it is presumption on my part to congratulate General MacArthur on his lecture. We have all enjoyed it very much indeed. He started, as a good lecturer would, by amusing us, taking as his text the louse, which to us is not as a rule a very amusing insect ; in fact, many of us have rather unpleasant recollections of it. Then he horrified us with his description of prisons in the XVIIIth century, and then I hoped he was going to restore our morale by telling us a little more about the results of the wonderful progress that has been made in preventive medicine. He rather disappointed me in not saying more on that part of his subject, but I suppose he thinks that we know all about it.

In the early days of my soldiering in India, I generally had 10 per cent. of my company in hospital with diseases which are now prevented. That state of affairs has been completely altered thanks to our doctors. I assume the Lecturer thinks that we all realize how much medicine has done, but honestly I do not believe that we do. Even when we look back on the Great War and remember how very successful our medical services were in keeping down disease, I do not think we soldiers really appreciate how great is the debt we owe to the medical service.

The lecturer made the point very clearly that it is not the doctor but the executive officer who is responsible for the health of the army, and I unfortunately, as Adjutant-General, bear the ultimate responsibility in that connection at the present moment. If there is an outbreak of preventible disease, General MacArthur would hold me responsible and put me up at the top of the highest lamp-post. I hope he will forgive me if such an outbreak does occur, but I can assure him that my first step will be to put preventive measures in force and to try to hoist him on Tyburn before he can get me there !

LIEUTENANT-COLONEL N. SAVAGE : During the War we were all infected with those nasty little insects about which the Lecturer has spoken. I remember that in the early days I used sometimes to make the men take off their trousers, issue them with Keatings' powder and clasp knives, and get them to scrape the insects out and then put their trousers in the sun. I cannot understand why, when we had these lice, we did not get typhus from them. We know that all the billets were full of lice ; there were more in French billets than in English ones. How was it that the insects did not become infected with disease somewhere in Europe and bring it over to our front ?

CAPTAIN E. W. RAIKES : I should like to ask the Lecturer if, in his opinion, the medical faculty, with all their knowledge, are only on the fringe of what they will eventually know about medicine, considering that if one asks one's medical officer to cure a common cold he cannot do so.

THE LECTURER

General Knox's assumption is quite correct : I thought that the results achieved by the medical service in the direction of preventive medicine were now fully realized. I was given only an hour for my lecture, and I thought that if I described the state of affairs in the past people would realize for themselves the difference between that time and this.

With regard to the question as to why typhus did not break out on the Western Front in France, the answer is that there was no typhus in England or France to call forth the disease, and without that it could not start. Thousands of Russians, Austrians, and Rumanians died from typhus, but the Germans managed to prevent any German soldier who had infected lice on him from being transferred to the Western Front. If they had not done so we should have had typhus on that front, but we could have stopped it, because we knew exactly what to do. Just as the Chinese stopped a battle because rain came, so we should probably have had to stop fighting until the typhus had been got under.

With regard to the progress of medical science, I think Captain Raikes is quite right. We are only at the beginning of things, and no doubt, with the tremendous amount of research work that is being done, eventually many problems, which are as difficult to us to-day as the problem of stopping typhus was to our ancestors two hundred years ago, will appear quite simple to us and our descendants.

THE CHAIRMAN

No doubt the modern commander in the field has a very anxious time and his worries must be considerable, but at any rate he has one advantage over his predecessors of other days, in that, provided adequate precautions are taken, he can always feel fairly confident that his troops will not be decimated by epidemic disease. I think, however, that there is a danger that commanders may come to look upon a healthy army as a thing to be taken for granted, and that, as a consequence, they may fail to give their essential support to the application of those methods which medical science dictates. It has to be remembered that the young soldier of to-day is at least as prone to contract disease as his predecessor of the past. It is the measures of precaution, protection, and prevention which have improved, and I suggest that it is of great importance that Commanders and Staffs should understand something of those methods, and should thoroughly appreciate the effect which their efficient application will have on the fighting efficiency of the troops.

A few years ago a new bacteriological laboratory was opened at Aldershot, and, by special permission, it was named the Leishman Laboratory, in memory of the great bacteriologist, Sir William Leishman, whose name, with that of another very distinguished man, Sir Almroth Wright, will always be associated with the introduction of anti-typhoid inoculation into the British Army. For the occasion some figures were got out, with a view to comparing the incidence of typhoid fever in the South African War and the Great War. The then G.O.C.-in-Chief, Sir Charles Harington, was so impressed by these figures that he issued instructions that they were to be permanently posted on the wall of the Laboratory. They are as follows : the average strength of our troops in South Africa was 208,266 ; in the Great War the average strength was 1,235,644—about six times as many. The total number of cases of typhoid fever in the South African War was 57,684, with 8,022 deaths ; in the Great War the total number of cases was 7,423, with 266 deaths. I am sure you will all agree that these figures are very very striking.

The day, of course, is long past when health precautions in the Army were regarded as a question that concerned only the doctors, and I believe that the very healthy state of the Army to-day is largely due to the principle—now almost universally acted on—that, while it is the duty of the medical officer to advise, it is equally the duty of the regimental officer to ensure that the advice given is carried out. At a time when modern developments are tending to make wars of the future even more horrible than those of the past, I suggest that we can derive some little consolation from the thought that medicine and her allied sciences are always striving to reduce those horrors. The difficulties which medical science has had to contend with and the successes and the failures which it has met with in the past, have been put before us in a very interesting manner here to-day, and we are very grateful to General MacArthur for his lecture.

The customary votes of thanks to the Lecturer and Chairman were carried by acclamation.

THE NEW LEADERSHIP

By MAJOR S. M. NOAKES, D.S.O., late R.A.

SOME thirty years ago, or even less, an appreciable number of the rank and file of the Army neither read nor wrote to any extent; many were definitely illiterate; others, although they could sign their names on the pay sheet, did so with the sweat pouring over the page as they wrote. Many of those who could read and write only did so when it was necessary, and never from pleasure. Modern education has completely changed all this, and it must be taken for granted by those in authority that those whom they command will think, read, and write about what they are doing as they do themselves; that is to say there is, broadly speaking, *equality of intelligence* between the officer and the man. By this it is not meant that the mental capacity of each man is equal to that of his superiors, but that the mental process in each case is the same, whereas formerly it was not so. Any regimental officer who is really in touch with the men under him will invariably have found from experience that to tell them what they "ought to know," to speak "officially," to give "lectures" and addresses to them of a formal character, is to a great extent futile. It may instruct the men, but it will not impress them. It may excite their intelligence but it will never satisfy it. It is only when there is equality between the speaker and his audience that a real effect is obtained; that is, when he speaks as man to man; then it is that the divine spark flashes and "virtue goes out." To do this it is necessary above all things to be *sincere*, and this is impossible unless the speaker first of all really *knows* what he is talking about and has the courage to utter it.

Therefore it is, and will be necessary, far more than in the past, that officers should have a wider knowledge than hitherto of the moral and political circumstances of the work upon which they are engaged, for without such knowledge they will only be able to pass on instructions or "speak to their brief." "Stick to the matter," said Cato of old, "and the words will come," and the reason that most speeches which are made are bad ones is not because they are badly prepared or improperly uttered, but because there is no "matter" in them. Thus, in order to give their men food for thought, the officers must think themselves, and herein lies the whole difficulty.

In any disciplined corporate body, whether military or civil, real thought is always awkward and is almost invariably discouraged. "No questions. I don't like them!" Marshal Ney used to say when giving his orders. Even the Duke of Wellington was deeply mortified by the action of his life-long friend, the Rev. Mr. Gleig, when the latter finally prevailed upon the War Office to permit the soldier to have reading rooms and educational instruction. "Depend upon it," he said, "such centres will eventually only prove themselves to be *foci* of mutinies." When he became Prime Minister, he admitted that his whole training tended to make his present task uncongenial. "I am now argued with, whereas in my military life I was accustomed to lay down my plans and they were carried out forthwith." Admiral of the Fleet Sir Roger Keyes in his Memoirs narrates with obvious pleasure how the officers to whom he addressed his ideas for Zeebrugge asked few or no questions. Indeed, he tells us that one alone did so, and put so many questions that he began to think he had chosen the wrong man. At last he was asked, "What is the whole thing for?" Sir Roger informed him, and he tells us that the result was afterwards most happy. It is clear that Lord Haig disliked discussion, which was difficult to him; while he never found it easy to express himself. In a word, he was emphatically a soldier, first, last, and all the time. There is no contesting the fact that where military action is involved any prolonged discussion or explanation is always inconvenient and sometimes disastrous. Soldiers and sailors when battle is at hand find it necessary to reserve all their energy for deeds rather than words. General Denikin in his Memoirs has stated how, once the Russian Revolution began, his officers were exhausted in appealing to their men—nothing could be done without speeches.

However unfortunate all this may be, it is as vain to complain of it as to complain of the overwhelming power and interference of the modern State in the affairs of life. Indeed, the more one complains about it the worse it will get. The only thing to be done is to meet it and, if possible, to mitigate some of its worst effects. Now to do this it is necessary to consider the assets possessed by the fighting forces; and first and foremost of these is that the officer is in every way still the natural leader of his men—a fact which is by no means true, and in many cases the reverse in all, or most, other professions of civil life. In industry the employer has little or no effect on the *thoughts* of his employees. Indeed, should he try to influence them, such action is very likely to have the opposite effect to that which is intended or desired. The writer once heard of a certain socialist who employed a very large number of men, and who wished to inaugurate a profit-sharing scheme in his works. When he called the nominees of his

workpeople together to discuss how the scheme should be carried out, he was met at first with silence, till finally one delegate said, "Look here, governor, tell us straight what's yer game!" "What's my game?" said the employer. "Why, nothing but what I have told you. Why do you ask?" "Because," was the answer, "of course you have a game—doesn't every employer have a game?" This philanthropist was cured at one and the same time both of his scheme and his socialism.

In all large Government undertakings and departments it is extremely rare to find what, happily, is still the rule in the fighting Services, namely, that those in charge are both *de facto* as well as *de jure* the leaders and inspirers of those subordinate to them.

If, therefore, the officers are trained in higher thought, and above all are taught to argue—a thing which the writer knows is at present viewed with absolute horror by the "powers-that-be"—it will be possible, in spite of modern education, to retain this priceless asset of leadership which we still possess. This means that some, and perhaps a great deal, of education now carried out by a special department should be done by the regimental and divisional officer. It is not intended that he should replace the department which now functions; indeed, all talks and addresses of officers to their men should be on special and informal occasions and not in any way in a regular course, for this will invariably lessen their effect. Above all, this instruction should never be given by Staff officers sent down obviously upon orders from the War Office or Admiralty, for such people on such occasions will be more than suspected. When it is necessary that these should visit a unit, they should speak to the officers alone in order that information to them may be imparted, and afterwards this may be passed on quietly and informally as opportunity arises.

It will be urged by some that a great deal of what is here set out is already taking place in good commands. Not only, however, is this not so, but in practice it will be found that serious, really serious, discussion is discouraged in the Army and Navy, often to such an extent that, though officers have opinions, often decided and profound, they have the greatest possible difficulty in expressing them. If the reader doubts this, let him try it on his friends and ask any of them when in company to give their views on any of the most important of everyday topics. By giving their views it is not meant that they should merely state their opinions, such as, "to hell with the League! Now what's yours?" What is meant is that they should be able to give a short terse statement showing real thought. It will be found that few can do this, and those that can are regarded as "gassers," and the method of

stopping them in the Senior Service is, or used to be, "Well, now let's talk about some great man!"

The writer does not wish for a moment that it should be thought he is not to a great extent in sympathy with this age-old tradition and custom, for it is neither more nor less than the spirit of the man of action and not of words, throughout the ages. When at one time, not so long ago, there was a great discussion in the Press as to the thoughts and ideas of the man in the ranks in the last War, Lord Milne closed it by saying, "The British soldier had no outlook," and in the majority of cases that was just as well: he was only required to do his job, and he did it. What is meant is that, however admirable, from a military point of view, such an attitude may have been in the past, it is unlikely, in an age of universal education, to be the attitude of the future, and that, therefore, it is necessary to provide for it now.

Authority nowadays is *questioned* in all democratic countries, not only in Government, but in industry, in the Church, in the family, and in life. So much is this true that in a large number of countries this phenomenon is provided for, or sought to be provided for, by means of dictatorship, which really means that, thought being difficult to control, it is therefore to be stopped altogether if it should take what may be considered to be an awkward direction. It is, unfortunately, possible for such means to succeed, certainly for a time, but in an active-minded race it can only be for a time, and the result afterwards is likely to be proportioned in its licence to the amount of restraint which has previously been exercised.

The one way of meeting and dealing with education and all that it stands for, both the good and the bad, is by means of higher education properly and carefully applied; and it is to be remembered that, if this task is not performed in the proper way by the proper people, it will most certainly be performed in an improper way by improper people, and that is what has already taken place to a great extent both in schools and in industry.

THE ANNUAL WEAPON TRAINING COURSE

By LIEUT.-COLONEL R. L. SHERBROOKE, D.S.O.,

The Sherwood Foresters.

IN war the principal duty of an infantryman is to be able to use his weapons with precision and effect, yet this portion of his peace training, the Annual Weapon Training Course, is relegated to a period of concentrated instruction in the use of the rifle and the Lewis gun or the machine gun and the rifle, lasting only four to six weeks per annum, and to a certain number of weapon training parades during the Individual Training season (October to March). In actual practice, it is unusual to be able to get in four weapon training parades per week during even four of the winter months. With half a battalion on the month's annual leave and the other half finding all duties, employments and fatigues, December and January can be counted out, and the time of what men are available has to be divided between the many subjects to be covered in the Individual Training period. Instruction during this period is moreover frequently unsatisfactory because there is usually a shortage of trained and qualified instructors owing to leave, courses and duties.

In most battalions, owing to the demands of Divisional and Brigade training programmes, it is generally impossible to allow more than four weeks for preliminary and refresher weapon training instruction and for the actual firing of the Annual Weapon Training Course, exclusive of the Field Firing Practices, so of necessity this first rush period is apt to degenerate into a course of cramming for the examination (the classification practices) that immediately follows it. Instead of thus confining the actual firing of the range practices to one month in the year, it is suggested that the practical portion of the Annual Weapon Training Course should be spread over eight or nine months, between February and November, and that actual firing should take place on the range and/or on the field firing area once a week. Seventy-five per cent. of the battalion would fire each day, every man thus getting approximately three days a month; the instructional practices would come in the early part of the year and the Classification Practices between August and November. The march to and from the range.

could be counted as a route march for training purposes, and shooting would take place whatever the weather was like on that particular day. The actual dates for the firing of the Classification Practices would be fixed beforehand by the Divisional Staff, as many units as possible firing on the same day and under active service conditions. This would mean that the men would be trained to shoot in bad weather as well as good, wearing the equipment they would wear on active service and after carrying out a march. It would also have the result of doing away with the existing system of cramming for the final Weapon Training Test and would spread over the whole year the weapon training of the unit. In many battalions serious efforts are made to carry on with the weapon training of young soldiers and 2nd Class Shots throughout the year, particularly during the Individual Training period, but such is the shortage of men and S.A.A. and so great are the demands upon the time available that few units can do very much in this line.

FIELD FIRING

In the average battalion in the average station, field firing is carried out during or at the end of Battalion Training, and it is a lucky battalion that gets three days of it. In 95 per cent. of units each man gets one day's actual practice with ball ammunition in the year during field firing, yet when he goes on active service he never fires his weapon except in the field and under conditions entirely unlike those of the range, including the use of every sort of cover, judging distances, shooting while being shot at, the selection of suitable targets, and above all the conservation of his ammunition. In the Aldershot Command there used to be a very useful Inter-Platoon Weapon Training Competition called the Evelyn Wood Cup which included a forced march of seven miles followed by a Field Firing Test beginning at 1,000 yards and including Fire Control, Fire Direction, Judging Distance and accurate collective shooting under field firing conditions. In 1905 and 1906 (when the writer took part in these tests) the competition between platoons (then called sections) was very keen and the practical weapon training provided was of the greatest benefit to the battalions in the Command. Would it not therefore be a good thing to include during the company or battalion training period an Evelyn Wood Field Firing Competition in every battalion in the service?

His classification in the Annual Weapon Training Course is an important factor when the soldier is assessed for his Proficiency Pay and the Annual Weapon Training Report of the battalion depends upon its success during the Classification Practices, so it is obvious and natural that efforts are made to ensure that every individual in the unit shall

fire his course under the best and most favourable conditions wearing a service dress cap, and never attempting to shoot with his greatcoat on. It is for these reasons that the preliminary training and instructional practices immediately precede the firing of the test (Classification) practices. Although the whole Weapon Training Course has been vastly improved, rendered more practical and very much more instructive by the use of figure and silhouette targets, it has got to be fired on a rifle range and is therefore only useful for testing and correcting individual faults in the handling of the weapon and the soldier's personal proficiency in its use under match shooting conditions. As a training for war it can only be regarded as the first stage of the soldier's training in the use of ball ammunition, fire, and movement.

SCALE OF ISSUE OF S.A.A.

A trained soldier is allowed 190 rounds per annum for his annual (Rifle) Weapon Training Course, including both instructional and Classification Practices as well as repetitions, and he is also given another 60 rounds per annum which is intended to be devoted to the zeroing of rifles, battalion and company Competitions, training for matches, additional instruction for bad shots and field firing. This makes a total of 250 rounds per man; if good results are to be obtained, it is not enough even under the present system and Annual Weapon Training Course. Most units that are keen on weapon training endeavour to obtain more S.A.A., when the command pool has been exhausted, although there are regiments that actually manage to return unused ammunition. In these units good shooting is possibly not a tradition as in the case of those whose titles figure in the first half dozen places of the Prince of Wales' Cup and other Inter-Unit Army Competitions, but if a good average standard of instruction is maintained amongst the junior N.C.O's of companies, there is really no reason why the men of one regiment should shoot better than those of another provided that the supply of S.A.A., ordinary facilities, average weather and other conditions are the same for all. In certain regiments every officer has to become a marksman and, until the necessary results are obtained, officers and other ranks alike who are not at least 1st Class Shots spend three or four afternoons per week on the range practising with ball ammunition. That it must be almost impossible to carry out voluntary shooting on this scale without the provision of considerable quantities of additional ammunition is obvious, and it is suggested that the present scale of issue should be raised to save the necessity for the purchase of extra S.A.A. by unit rifle clubs.

To-day the Army is being trained for mobile warfare in the early

stages of any campaign it may be called upon to undertake, but how long such open fighting will be possible between two modern armies is a matter of opinion. With the vast increase in the power of armaments, big and small, it is at least doubtful if infantry will ever be able to manoeuvre in daylight within range of an enemy that has been in possession of a selected position, even for a few hours, and so it may be well to consider some aspects of static or defensive tactics. From practical experience with battalions in France during the four years of the War, the writer formed certain definite opinions which subsequent years of peace-time weapon training have not modified, and, as they bear directly upon the question of the Annual Weapon Training Course, these opinions are submitted for consideration :

- (a) It was extremely difficult to obtain accurate results (i.e., to inflict casualties on the enemy immediately opposing), with aimed rifle or Lewis gun fire at distances over 300 or 400 yards, and most of the S.A.A. used at such distances was either wasted or merely caused a few unseen casualties in rear positions. Those who were in the trenches in October–November 1914 will remember the appalling waste of ammunition, even by trained men and old soldiers, and with the coming increase in automatic weapons, the necessity for teaching strict economy in the use of S.A.A. is now even more important.
- (b) Accurate rapid fire at short ranges including snap shooting is possible and effective, and more time and S.A.A. should be devoted to this form of training.
- (c) Reliable marksmen who, to start with must be naturally good shots, are of value for accurate long range fire and for keeping down enemy sniping. These sharpshooters must be very carefully selected and their training should be done on a field firing area as much or more than on a rifle range.
- (d) The average infantryman requires very much more training in fire and movement with S.A.A. on a field firing area than he gets at present.

These views imply that, except for some 120 really good shots, all range practices at distances of over 400 yards could be eliminated and the ammunition devoted to rapid and sharpshooting practices and field firing ; further, that early in their training these 120 very good shots should be selected and trained apart. Finally, that not less than ten full working days in every year should be allotted to field firing with ball ammunition, for the whole unit.

SECOND CLASS SHOTS

In every battalion there are a few men who, usually because of some physical disability, are never able to get beyond 2nd Class Shot, and it is submitted that such men should have a shorter modified course just sufficient, if possible, to give them confidence in their own ability to shoot down an attacking enemy at any distance up to 300 yards. To do this, these indifferent shots should be given special figure targets at distances varying between 100 and 300 yards; but to expend much time, trouble, and ammunition on such permanently bad shots in normal range practices is wasteful because, even though they may sometimes appear to improve in one or two practices they seldom keep it up, and on service can rarely be depended upon to fire aimed shots. This, of course, is the reverse of the present system which takes the ammunition from the marksman and gives it to the bad shot, but after, say, two successive (annual) failures to reach the first-class standard it is very rarely that a soldier ever becomes a good reliable shot, and the writer holds the view that the annually recurring individual instruction, time and S.A.A. now devoted to such men, would be better used in making marksmen into dead shots at 500 and 600 yards and in training 1st Class Shots to maintain their standard of accuracy under field firing conditions.

Because a man is not a good shot it by no means follows that he is not a good soldier and many 2nd Class Shots are specialists in other important departments. Clerks, typists, mechanics, horsemen, cooks, and athletes are frequently found in the list of 2nd Class Shots, and, provided they are really good at their jobs, few C.O.'s would be willing to exchange them, even for marksmen. Further, because the weapon training of the 80 to 100 (or so) 2nd Class Shots in an average battalion would be of a modified or elementary nature, it does not follow that the fire of these men in action will not cause casualties to the enemy, because their ill-aimed shots are just as likely to find targets in the opposing support or reserve positions as are those of 20 per cent. of the 1st Class Shots of the unit. Finally, it would always be open to such men to try and improve their shooting.

Another suggestion put forward for consideration is that in all rapid practices and snap shooting up to 300 yards, men should be trained to use the aperture sight only, because except in the case of very cool individuals and experienced rifle shots, there is always a tendency "to lose" the foresight both when firing rapid against the watch or against an approaching enemy. This must be put down to the human element but is a factor which should not be lost sight of, particularly when dealing with less well-trained men as in the years 1917 and 1918.

NEW WEAPON TRAINING COURSE

It is realized that to give effect to these suggestions would mean the institution of a new graduated (Rifle) Annual Weapon Training Course for trained men, with three distinct parts (C, D, and E), the provision of increased facilities for field firing and the expenditure of a good deal more S.A.A. ; but if the infantry of the very small standing army that this country maintains is to become really highly trained in the use of the rifle, the writer submits that such additional expenditure is definitely required together with the suggested modifications and changes in the existing system of Weapon (Rifle) Training. As regards the new annual course, it is suggested that Part " C " should be fired by the 80 to 100 2nd Class Shots ; Part " D " by all 1st Class Shots and some marksmen, and Part " E " by the 120 selected snipers. Recruits would continue, as at present, to fire the existing Table A at the depot and the existing Table B with the home battalion during their first 2 years service. To resume, it is proposed that there should be one Table for the best 120 selected marksmen, another for some 250 to 300 good shots (Marksmen and 1st Class Shots), and a third for the 80 to 100 indifferent shots (2nd Class and below). For the first of these an annual allowance of 400 rounds of S.A.A. per man should be allowed ; for the 2nd, an allowance of 300 and for the 3rd, 150 per head ; whilst an additional special field firing allowance of 15 rounds per man for the whole battalion should be made. In round figures this would cause an increase of 16,000 rounds in an average rifle battalion of 600 strong, at a cost of some £76 per annum, but as the cost of the present expenditure in S.A.A. is only about .5 per cent. of the total grant, such an increase would not be unreasonable. The above calculation is based on the future infantry organization of four rifle companies but does not take into consideration the new Machine-Gun Battalions or the course for the 40 sections to be armed with the new Bren L.M.G. For the super-marksmen's course (Part E) the *classification practices* should be from 400 to 800 yards ; for the good shots (Part D) from 100 to 400 yards, and for the 2nd Class Shots (Part C) from 100 to 300 yards. The above is merely a very brief outline of the suggested modifications and no attempt has been made to go into details or to deal with the question of preliminary and instructional practices.

The principal difficulty to be met would be the provision of suitable field firing areas, but something will surely have to be done about this in any case as the two M.G. and one anti-tank companies of the new M.G. battalions will have to go somewhere to practice, presumably in practice camps, and it is obvious that the existing areas will not be sufficient. In this connection it is suggested that it might be cheaper

to hire suitable areas in normal grazing or agricultural country for six to eight hours at a time on ten to twelve days in the year. It would of course be necessary to clear from such areas all living things and adequately to guard all approaches to them. The tactical training and reality of the schemes that could be put into practice in such areas would be very great, and experience would prove to the owners of the land that the inconvenience and damage caused were slight, particularly if the dates selected were between the months of January to March and September to December. Where large tracts of War Department land exist, special areas for field firing might temporarily be marked out for tactical exercises combined with field firing, and it is submitted that three or four days continuous company training in such areas under active service conditions, including the use of ball ammunition, would produce far more valuable results than a fortnight in a restricted training area limited by out of bounds signs and without the possibility of combining a single day's field firing with the tactical exercises to be carried out by the company.

Against the proposal to allot more time and S.A.A. to rapid fire it may be urged that, with the coming increase in light machine guns, the rifle should become more the weapon of precision and that rapid fire could be left to the automatic weapons. But with some savage tribes, as well as in the case of certain less well trained continental armies, mass attacks will always have to be expected, and well-aimed rapid fire is the answer. Further, under the heading "Rapid Practices" falls snap shooting of all sorts, and in this the present Annual Weapon Training Course is still somewhat lacking. In future wars a man who can hit an enemy at 500 yards, while exposing himself for a few seconds only, will be of great value.

ANTI-AIRCRAFT PRACTICES

Turning to the question of infantry defence against low-flying aircraft, it is suggested that the existing methods of instruction in training men to shoot at aeroplanes with any hope of hitting them leave a good deal to be desired. In some stations the local range possesses a miniature aeroplane target that moves across the butts; in others, practices of this sort can only be fired with .22 ammunition on a miniature range, whilst in many foreign stations not even these two methods of instruction are available. Up to the present, little (if any) instruction, either for the Anti-Aircraft Lewis Gun Section or any rifle platoon, is given at a model aeroplane *in the air*, and it is suggested that it would not be a difficult matter to erect on permanent ranges two poles 50 yards apart joined by a wire along which a model

aeroplane target could be pulled very rapidly. Practice with actual ball ammunition—except against a stop butt—would, of course, be impossible, but use of a "Sleeve" target might be made, and in view of the fact that most pilots with war experience dread the fire of infantry as much as that of anti-aircraft batteries, would it not be advisable to endeavour to meet the increasing power of the air by efforts to increase the power of the infantry to defend itself with its own weapons. In support of this suggestion it is worth remembering that during the past three years untrained native tribesmen in Iraq, the North West Frontier, and, quite recently, in Abyssinia, have been able to riddle aircraft with bullets and have actually brought down with rifle fire six or more aeroplanes that were operating against them. The present infantry battalion establishment of one (Light Automatic) Anti-Aircraft Section (2 L.A. Guns and 7 other ranks) per battalion (exclusive of the one double-purpose section per company) can scarcely be regarded as adequate and might be increased to one permanent A.A. Section with anti-aircraft mounting and limber per company, making five per battalion exclusive of the 48 ordinary sections under the new organization (1936-37). The training of these five anti-aircraft sections might be considerably increased and should include instruction with the "Camera Gun" as used in the R.A.F. for training gunners in aerial combat. One of these weapons per battalion would improve the results to be obtained against Head and Tail targets at short ranges by the anti-aircraft sections of the unit, provided of course that aircraft—military, civil or private, were made available for training the anti-aircraft sections of the Brigade or Division, say, twice a month.

It is of course realized that in the past the principal difficulty has been lack of funds and suitable training areas, and the intention of the writer is not to suggest that good use has not been made of the very limited training grant, but rather to emphasize the importance of now increasing the sum allocated for the instruction of the Army in ratio to the increased expenditure on armaments. One final suggestion is, however, submitted for consideration, to wit, that a larger proportion of time and money should be given to the training of units, if necessary at the expense of formations.

THE FLEET-FLAGSHIP

A PROBLEM OF NAVAL COMMAND

By LIEUTENANT G. M. BENNETT, R.N.

"Every Officer is to follow the motions of the Senior Officer present in regard to the performance of any evolution or the carrying out of any duty. . . ."—KING'S REGULATIONS AND ADMIRALTY INSTRUCTIONS (ARTICLE 27).

PART I. AN HISTORICAL SURVEY

FROM what position should a naval Commander-in-Chief exercise his command during battle? Should he form part of the battle fleet, or should he direct its operations from an exterior position in a cruiser or an aircraft-carrier or even from an aeroplane? This is a problem which, possibly, is not now in serious dispute but at the same time it is one whose accepted solution is still challenged. We know that it received consideration as early as 1530, for a Spanish writer, Alonzo de Chavez, has said :—"The Captain General should be stationed in the centre squadron so that he may see those which go before and those which follow. *In battle the flagship should take care not to grapple another for then he could not see what was passing in the battle fleet nor control it.* If any accident befell him the fleet would be left without guidance." Comment on these words is reserved for the moment; it is sufficient to note that one sentence has been printed in italics because it still remains the principal argument for suggesting that a naval Commander-in-Chief should no longer fly his flag in a ship-of-the-line.

Among the works of naval historians there are many references to the problem. Those who write of Rodney, Howe, Hughes, or Suffren inevitably comment upon it. Mahan, in *The Influence of Sea Power upon History*, has four pages on the subject, but they are hardly adequate. No writer yet appears to have attempted a full analysis of the problem. With that end in view, it is proposed firstly to examine the nature of naval command and thence to deduce the position from which it should be exercised. The various historical instances of the use of a vessel other than a ship-of-the-line as fleet-flagship will be considered. Finally the practical requirements of a fleet-flagship together with various

suggested solutions will be examined and an attempt made to deduce that which is most satisfying to the needs of a fleet to-day.¹

THE NATURE OF NAVAL COMMAND

In early days, when warfare was primitive and tribal, the commander of a force led his main body into action, keeping his undisciplined followers together by his personal example. As civilization progressed and the size of forces taking part in a battle increased, it was no longer possible for one man to exercise a direct influence on the whole of his forces. The commander therefore surveyed the battle from a distance, exercising only an indirect control over the forces actually engaged. He kept the reserves waiting until such time as, from his personal observation, the course of the battle could best be turned in his favour by their application at a decisive point. Then as the centuries passed and numbers and power of movement grew, it became no longer possible for a commander to review by eye the whole battle. The first alternative, to view but a part, was discarded since it led to a biased appreciation of the course of the battle. Thus the commander withdrew to a position in rear of his forces, and relied upon good communication with them to furnish him with reports of their progress and to enable him to direct their operations. The Commander-in-Chief in the field to-day is, therefore, a commander who inspires his men by indirect leadership; he delegates the tactical handling of the troops to his subordinates divisions and commanding brigades; they, in turn, delegate the actual handling of the men to battalion, company, and platoon commanders, who supply the necessary direct personal leadership. The Commander-in-Chief directs the strategy of the forces which he commands, orders their principal plan of action, and gauges the use of general reserves. He co-ordinates and directs all. Above him the Cabinet and War Office direct the general strategy and conduct of the war, and are responsible for supplying the Commander-in-Chief with the personnel and material which he requires.

Omitting the Cabinet and War Office, the three stages of military command may be summarized thus:—

1. Personal leadership.
2. Personal direction.
3. General direction.

Each has its counterpart in naval warfare: the captain of a destroyer

¹ I am indebted to Admiral Sir Herbert W. Richmond, K.C.B., Captain E. W. Denison, R.N., Commander J. H. Owen, R.N., and Mr. Brian Tunstall for advice on the historical aspect of this paper.

or submarine and the officer of a turret exercise command by personal leadership; the captain of a flotilla and the Admiral commanding a squadron exercise their command by personal direction. But these are not matters to be debated here; the point which remains to be decided is the nature of the command exercised by the Commander-in-Chief of a fleet. Does it fall under the heading of "personal direction" or "general direction"? Before this can be decided it must be noted that while we can compare the nature of different types of command, as exercised by sea or land, there are fundamental differences between the two forms of warfare; even if the principles which govern the strategy are the same, the methods by which, and the conditions under which, they are applied are different. Admiral Richmond has reminded us that: "Naval battles rarely arise as the result of a series of manœuvres leading up to them. Except when both fleets desire to fight, which is uncommon, a meeting has more often come about by chance than design." In naval warfare there is nothing to resemble the work of a military staff in preparing elaborate operation orders by which an army is moved into position preparatory to battle, moved into battle, and moved during a battle which, perhaps, lasts for weeks. At sea, chance, even if it is sometimes assisted chance, brings the forces into contact, so that it is not so much written staff orders for movements to bring on the battle or for conducting the fleet in battle that are required, as the commander's immediate decision and direction as each new development occurs, even though it often cannot be foreseen. A writer has said: "The military art may be reduced to rules: it is almost a certainty that an order will produce certain results; the commander moves his pieces with nearly the precision of a chess player. But the seaman is dependant on two uncompromising agents and over them he has no positive control. Tides, seas, and winds will rise and fall, and wait for no man. The seaman must take them as they come, and be ready with his resources. A shift of wind threw three of thirteen ships out of the brunt of the battle of the Nile. Fogs and calms obscured the signals and retarded the movements of Howe. A gale scattered the hard-won trophies of Trafalgar, and prevented the entire destruction of the enemy."

From this it can be suggested that the nature of the command exercised by a naval Commander-in-Chief is something more than general direction, but before finally deciding this point it is necessary to examine the nature of the control exercised by the Admiralty *vis-à-vis* that exercised by the War Office. Admiral of the Fleet Sir Arthur Wilson had an acute difference of opinion on this point with Lord Fisher when they were Commander-in-Chief of the Channel Fleet and First Sea Lord respectively in 1905. At this time, when extensive redis-

positions of the fleet were taking place and most of it was being moved into the North Sea, new war plans were produced which were in principle those in force in 1914. These laid down that the main battle fleet with its attendant cruisers, etc., was one command, but that in addition there would be various cruiser squadrons and destroyer flotillas operating in the same or adjacent areas for the protection of trade which would be separate commands under orders from the Admiralty. Sir Arthur Wilson objected to any form of Admiralty control. He gave it as his opinion that the Commander-in-Chief of the main fleet should control all strategy and operations in Home waters and the North Atlantic, and that the Admiralty's business was only to supply new ships, men, munitions and intelligence. This opinion was probably influenced by the fact that the Admiralty War Staff was as yet in its infancy and its functions far from generally understood. Sir Arthur Wilson got his way whilst in command, but when he was relieved the system reverted to that which, even if it had never been laid down on paper before, had been well proved a hundred years before by the combination of Nelson and Barham and was later to be proved by the Great War. The development of wireless telegraphy has served to increase the Admiralty's power of general direction. The enormous problem of competing, not only with the main fleet but also with all the strategic dispositions, movements, and operations required for the safety of trade, would require a staff so large as to be beyond the capacity of any warship. To establish such a staff ashore at the fleet base would be an unnecessary duplication of that at the Admiralty.

As far as Home waters are concerned, and to a slightly lesser degree the Mediterranean, it appears that the Admiralty must exercise considerably greater control over the fleet than is exercised by the War Office over the Army. Each, under the Cabinet, is responsible for ordering the general direction of the war on all fronts and for co-ordinating such action. Each is responsible for the supplies, men and material, of its forces. But there is nothing comparable to the position which often arose in the last war when the Admiralty would inform the Commander-in-Chief, Grand Fleet, that the High Seas Fleet was getting under way, leaving him with virtually no option but to put to sea and seek battle. It appears, in fact, that the Admiralty combines the roles of the War Office and of the G.O.C. at headquarters. If the principal area of naval activity was moved further afield, Admiralty control would doubtless lessen, but then it would presumably be necessary to establish what would amount to a deputy Admiralty in the form of a Commander-in-Chief and Staff ashore in the area concerned. The Commander-in-Chief afloat cannot control every form of naval activity. The operations of the main fleet are his principal business and he should

only be consulted and kept informed of other operations. If he and his staff try to run them they will forget their main object, which in all senses is big enough.

If, then, it be agreed that the Admiralty exercise that form of command which we have specified as "general direction," it is suggested that the naval Commander-in-Chief exercises "personal direction" of the main fleet. Naval warfare is essentially mobile whereas land warfare, in spite of mechanization, is relatively static. A naval commander may exercise administrative and strategic control of his fleet from the rear (i.e. the fleet base) just as his military confrère does. But as soon as tactical operations by the main fleet are concerned the Commander-in-Chief must go afloat (or into the air), for he cannot exercise personal direction if he be elsewhere than in the immediate vicinity of his forces. From time immemorial the Admiral has used a ship-of-the-line as his flagship, and, once battle has been joined, taken up a position in the front line, in direct contrast to his military *confrère*. Because this is the traditional position it should not deter us from examining the wisdom of such procedure, and it will be of interest to examine the circumstances in which Admirals have departed from this tradition.

RODNEY

Probably the most important flagship experiment was that tried by Rodney after his unsatisfactory action with De Guichen off Martinique. It will be remembered that Rodney's intention was to mass his fleet against the enemy's centre and rear, but that the plan miscarried owing to a misunderstanding by his Captains. Rodney's energies as a fleet commander had been concentrated on precision in manœuvres; he centralized very completely and left little to the initiative of his Captains. On 17th April, 1780, by prolonged and careful manœuvring he achieved the situation of which he had dreamed for months. In his despatch he claimed that if his signals had been obeyed the centre and rear of the French fleet must have been wholly disabled before the van could have come to their help. This was very likely true, though it was unfair to use the word "obey," since his Captains simply did not understand what was required of them. From the way the *Fighting Instructions and Additional Fighting Instructions* had been strung together there were bound to be contradictory articles among them, and any new manœuvre, such as Rodney's, would require careful explanation before use. But Rodney was not a man who took his juniors into his confidence; he planned to command the fleet as a sergeant drills a squad of men. The failure of this action taught him

nothing but the need for taking up a position where he could control his ships more rigidly.

"The fire of the 'Sandwich' (Rodney's flagship) was so constant and perpetual during the action that it was impossible for me to observe either van or rear 'till it ceased and the enemy had retreated. . . . Signals, none could be made from the 'Sandwich,' her topmast was gone."—(*Rodney*).

"The barefaced disobedience to orders and signals, acknowledged by every ship, was such as calls aloud for strict enquiry. . . . To prevent a repetition of the like conduct I have signified to the whole fleet my intention of hoisting my flag in time of action on board the centre frigate, appointed to repeat signals, having the other frigates attending to carry orders to particular ships, to enforce signals I may find it necessary to make."—(*Rodney*).

"The resolution the Admiral has taken, in the next action to be on board of the centre frigate, does him infinite honour. Lord Howe has frequently told me that in action it ought clearly to be the post of the commander, but few men would dare to set such an example."—(*Memo from the King*).

"I gave them public notice that no rank whatever should screen any person who disobeyed orders or signals; that I should hoist my flag on board a frigate, in the centre, from where all signals should be made." . . . "It is impossible for your Lordship to conceive the infinite utility of this resolution . . . my eye was more to be dreaded by those who betrayed their country's honour than the enemy's cannon. It is inconceivable in what awe it kept them. No regard was paid to rank. When either Admiral or Captain were out of their station a signal was instantly made, and a frigate dispatched with orders, which had so good an effect that frequently when they saw the frigate approach they got into their station."

Such words by Rodney show fully his own conception of the drill-sergeant method of command. Little wonder that a military friend, Lord George Germain, who had commanded the British troops at Minden, should write: "Everybody approves of your intention of hoisting your flag on board a frigate in the next engagement. I have not the smallest conception how any signal can be made or order given whilst the Admiral's ship is engaged with the enemy, and it is surprising that so absurd a custom should have subsisted so long, and that no Admiral has had the courage to break through it." "Everybody" in England may have approved of Rodney's intention, but it is quite certain that the fleet and particularly Rodney's own Flag-Captain did not, as subsequent events showed. For a fortnight of strenuous exercises

Rodney put his experiment into practice to his great content, for during this time "neither officers nor men could be said to have had sleep." Then on 12th May English and French fleets came into contact. While the enemy was approaching Rodney shifted his flag from the "Sandwich" to the "Venus" (frigate) "to manœuvre the fleet to more advantage." De Guichen, however, had no intention of fighting and only made occasional feints at the English fleet during the next two days. On the 15th there was an indecisive action and a partial engagement on 19th, after which both fleets retired to harbour to refit.

In so far as the Admiral could see more of the enemy's movements by going on board the "Venus," it may be that he had a better chance of forcing a battle. A frigate was faster than the battle fleet, and Rodney could move at will to the best position for observation. But he put his fleet between himself and the enemy (it was inevitable that he should be on the disengaged side once battle was joined) with the result that the effective control of the battle fleet passed into the hands of Captain Young of the "Sandwich." In the Flag-Captain's own words: "I have said in my letter I made signals. This was settled with the Admiral after he left me; to make such signals as I saw necessary for the good of the service; which signals I was to show him by hanging them out at where they were to be made; and continued so doing until I saw him blunder, and then I wrote him that I would not be responsible for errors, as I had his flag to defend, as well as to make signals, but that I would repeat any signals he made and give him any information I could. When the French Fleet came down on us for the first time, he left me in a confused state and in short I did not know he was out of the ship . . . His being in the frigate was of no service, as he always kept to leeward of our line. The enemy being to windward he could never be a judge of it."

Subsequently Rodney abandoned the idea and on 31st July of the same year he wrote to the Admiralty: "You will much oblige me if you let the 'Gibraltar' be one of the ships that joins me. The 'Sandwich' has received so much damage as will require her being taken into dock. I am sorry for it as she has proved herself a good man of war. . . . Mr. Keppel had no right to say I would have shifted my flag." Rodney had found definite tactical reasons for being in one of the ships-of-the-line, which doomed to failure his frigate experiment. In days of sail, subordinate Flag-Officers and Captains looked to the flagship for guidance in case of sudden change of wind or of the position of the enemy. Situations of this kind demanded instant and last minute alterations of course and canvas, and, since it was generally too late to make an elaborate signal, the only thing possible was to follow the

Admiral's motions. It only remains to note that Rodney would never have obtained immortality had he exercised command from a frigate in the Battle of the Saints in 1782. Here he obtained a decisive victory by breaking the enemy's line, a manœuvre which suddenly became possible owing to a change of wind and which was effected, not by signal or pre-arranged plan, but by a flash of genius whereby Rodney turned his ship through the enemy's line and his subordinates followed his motions.

SUFFREN

It is not surprising that at about the same time the French should also have considered putting the Admiral into a frigate, for it was an era of rapid development in naval tactics. Their stated reasons for effecting such a change are however far from praiseworthy. In the first place the French, to an even greater degree than Rodney, had adopted the idea that naval manœuvres can be as sure and rigid as parade ground movements. At the battle of the Saints the French Commander-in-Chief, de Grasse, was captured when his flagship fell into Rodney's hands. This appears to have been the final factor which influenced the issue of the following memorandum by the French king: "M. le Comte de Grasse, having long recognized that it was impossible for the Commander-in-Chief of a fleet properly to estimate the movements of his own line and of those of the enemy during a battle, as much in consequence of the cannon smoke in which he is shrouded as by the attention which he is obliged to pay to the movements of the ship on board of which his flag flies: having recognized also that the ships in the van and rear are only able to distinguish with difficulty the signals addressed to them from the centre of the line, and that the time for their execution has often passed before they are seen: . . . it is my intention that in the future the commanders of My squadrons when they shall command more than nine ships and are delivering an attack in line, are to proceed on board a frigate from whence it will be more easy for them to observe the enemy's movements and direct the movements considered most proper for the squadron under their command, and to hasten their execution. . . ."

On receipt of this Suffren, in command of the French fleet operating against Hughes in Indian waters, wrote: "I shall conform to it so far as I consider it of value to the good of the Service. The spirit of the order would be but poorly complied with if, in putting it into execution, the Commander-in-Chief should not give that example which a commander must show on those occasions in which he is able to command from his own ship quite as well as from elsewhere."

In his action with Hughes off Cuddalore on 20th June, Suffren complied with the new instruction. The French fleet in line ahead attacked the English fleet ranged on a similar course. It was a hammer and tongs action between fleets of almost equal numbers. Suffren in the "*Cléopâtre*" (frigate) stimulated his fleet by cruising along the disengaged side and encouraging his ships to close. If anything, the advantage at the end of the action lay with Suffren, though it was far from being decisive. Nevertheless, Suffren wrote regarding his attempt to command from a frigate: "*ce sera la première et dernière fois.*"

HOWE

On 8th August, 1778, the French fleet entered Narragansett Bay (inside Rhode Island). At mid-day on the 9th, Howe appeared off Rhode Island and anchored; the wind, being from the southward, was unfavourable for any exit by the French ships. Next morning as it backed to the North-East, D'Estaing cut his cables and put to sea. When the enemy was coming out, Howe ordered his fleet to cut or slip. The two fleets prepared for battle and stood to the southward under easy sail. Howe was to leeward but the appearance of the weather suggested that the wind might veer to the southward, and he hoped that, by drawing the French after him, he might gain the weather position later in the day. The wind, however, was obstinate and stayed in the North-East. By sunset the French were still some six miles on the port quarter of the English.

At daylight on the 11th the French were nine or ten miles behind; it was still blowing from the North-East, but since they were now some sixty miles from land, Howe could no longer hope to profit by a change of wind. It became necessary to attempt to gain the weather gauge by tactical manœuvring instead. Shortly before noon, Howe shifted his flag from the "*Eagle*" (64) to the "*Apollo*" (frigate), and in her he kept between the two fleets "to be better situated for directing the subsequent operations of the squadron." He had apparently every intention of returning to his proper flagship before battle commenced. The Captain of the "*Eagle*" describes the day's events:—"At 8 a.m. altered course to South; half-past ten to S.W. by W.; at half-past eleven to West; half-past one to N.W. By these different changes of course, which were performed in succession from the van, our fleet made a considerable circle; and the French continuing to steer for our rear, they got so far to leeward that by four o'clock the greater part of our fleet, had they tacked, could have weathered the French fleet; but by this time the wind had increased to a gale, with a great sea . . . nor indeed would it have been prudent to have brought two

fleets to action in such weather and so late in the day, when nothing decisive could possibly be done." . . . During the subsequent gale the "Apollo" lost her rigging and spars and the fleet became widely scattered. When day broke on the 13th the Admiral was alone!

Now at some time in 1777 Howe had issued to his squadron a book of additional fighting instructions. Among these was one referring to the Admiral being withdrawn from the line of battle and shows that his action in standing out to reconnoitre the enemy by himself was undertaken deliberately—though not perhaps in a weakly armed frigate. It is sufficient to note that he repeated the manoeuvre again when he defied the combined fleets of France and Spain off Land's End in June, 1782, but that he remained on board his proper flagship, the "Victory." He was able to do this because the "Victory" was well-known to be an uncommonly good sailer for a first-rate. The Flag-Captain records:—"At daybreak saw the combined fleet in the S.W. quarter; the "Victory" and several other ships stood towards the enemy to reconnoitre them; the fleet were ordered to form the order of sailing. Many signals were made to the fleet in the course of this day; we kept between the enemy and our own fleet." Unfortunately the opposing fleets did not come to action.

OTHER HISTORICAL EXAMPLES.

There are many other occasions recorded in history in which the Admiral hoisted his flag in a vessel other than a ship-of-the-line. In all these the operation was one of a special nature in which a battle fleet was not directly employed. The Admiral commanded from a vessel other than a ship-of-the-line for some special reason; for instance, either because he had no ship-of-the-line in his forces or because he wished to operate in waters too shallow for such large ships. Numerous examples can be cited from Fairbourne at Cadiz to Keyes at Zeebrugge; but such cases are of no value as far as the present argument is concerned, since, it may be repeated, the battle fleet was not concerned, and under such conditions the choice of the most suitable fleet-flagship rests upon different requirements.

There are also certain peace-time examples of the use of special vessels as fleet-flagship. One, the use of an administrative flagship by the American Navy, while not strictly applicable to this paper, has been included in an appendix as it is of general interest. Fisher, as Commander-in-Chief in the Mediterranean, used the "Renown" as his flagship. She was a small capital ship with weak armour and 10-in. guns, and it is open to doubt whether he would have remained in her

in war. In any event, such cases may be disregarded because they were never put to the test of battle.

We are left, therefore, with three occasions on which a frigate was used as flagship by the Admiral commanding a fleet which included battleships, i.e. a battle fleet. It may be argued that the days of sailing ships and muzzle-loaders are not good precedents for the days of turbines and oil fuel. It is, however, proposed to show that the *fundamental* lessons of these historical examples are still applicable, so it will not be out of place to summarize them here.

Rodney found his control of the fleet hampered when using a ship-of-the-line, in that his vision was limited and signalling rendered difficult by the inevitable noise and smoke of battle. His attempt to solve the problem by using a frigate placed him in a worse position because, while conceivably he might be better placed to exercise general control of the fleet, he was no longer able to exercise personal direction of the battle fleet to the extent that such direction was required in battle. The French, obsessed to a greater degree with the tactical doctrine of parade-ground manoeuvres at sea, attempted the same solution with the added desire of preserving the Admiral from capture by the enemy fleet. Suffren tried the idea in battle once; found, as Rodney had done, that he lost personal direction of his battle fleet; and vowed never again. A fundamental fact was clear: the Commander-in-Chief might be in command of the whole fleet—frigates, fireships, sloops as well as ships-of-the-line, but since all tactical effort was directed towards destruction of the enemy battleships, and since this could only be effected ultimately by battleships, it followed that once the two battle fleets were engaged, the Commander-in-Chief's principal responsibility was the personal direction of his battle fleet. Neither Rodney nor Suffren found it practicable to effect this direction other than from a battleship *in the line*.

Howe did not attempt such a radical change. He simply desired to be in a flagship which was faster than the main body of his battleships, so that he could obtain a better position from which to view the enemy and to direct the movements of his fleet, prior to the battle fleets becoming engaged, and therefore before his personal direction was required. For lack of a suitable ship-of-the-line he first attempted to carry out this idea from a frigate with the intention of returning to his proper flagship before battle commenced. Bad weather forcibly brought home to him the dangers of such action. On a subsequent occasion he was able to adopt the idea using a fast ship-of-the-line.

(PART II of this article, dealing with "The Present-Day Problem," will appear in the November JOURNAL.)

EARLY NAVAL AERONAUTICS

By REAR-ADMIRAL D. ARNOLD-FORSTER, C.M.G.

ACCORDING to an article, "A Hundred Years of Service Aviation," in the JOURNAL of May, 1931, our military authorities were first awakened to the possibilities of "aerial vessels" in war by the exploit of an Irish officer, Richard McGuire—probably the first military aeronaut, who, in 1785, made an impromptu balloon flight and fell into the sea. Though I may not have been the first British naval officer to go up into the air, I can fairly claim to be the first to go up for purely naval purposes. Owing to shortage of time and funds, some ballooning experiments of mine at Portsmouth in 1900 failed to demonstrate the practicability of what I set out to do, but an account of the episode shows something of the enterprise and professional zeal amongst budding torpedo officers of that day. Also, it appears, now, to provide a moral—not that I thought of that at the time.

The batch of qualifying Torpedo Lieutenants who joined the old "Vernon" torpedo school at Portsmouth in 1899 had naturally followed every detail of the Spanish-American war of 1898. It will be remembered that great anxiety was caused in America by the delay in locating Cervera's squadron of cruisers in the West Indies—eventually discovered hidden in the harbour of Santiago de Cuba. A remark in an article by an able writer in *Brassey's Annual* of 1899 specially interested me at the time; after describing the search he says:—"This seems to have been a case in which, if ever, a captive balloon sent up from a cruiser might have been of service." Our Royal Engineers could already send up captive balloons in the field and tow them about with mule-drawn wagons. The French Navy was experimenting with balloons from a battleship in harbour. I made up my mind to show that it was feasible to fill a balloon with naval resources, to send it up from a suitable vessel, and tow it in reasonable weather; "flying," of course, was not in the picture at all at that time. Fresh from the breezy life in sailing ships, the actual handling of captive balloons appeared merely a matter of practical seamanship. Storage of gas in reservoirs and the use of compressing plant were nothing new to torpedo-men; and during our theoretical course at Greenwich we had learned how to make hydrogen

and other more noxious gases. Here seemed an opportunity of showing that the hours spent amongst the test tubes and bottles were not entirely wasted.

Army balloons were then pear-shaped or spherical, the "kite" principle to counteract the "beating down" effect of the wind not yet having been arrived at. During a week-end visit to the R.E. balloon factory at Farnborough, Colonel J. L. B. Templar, the pioneer of modern military ballooning, kindly showed me everything and supplied me with much useful data. I saw all that he had accomplished with official War Office backing, but knew that I must have something practical to show for naval purposes before any Admiralty assistance could be hoped for. However, it appeared worth having a try, even if experiments had to be done in my own time and at my own expense.

In September, Stanley Spencer, one of a firm of balloon makers and a famous aeronaut who made ascents in a hot-air balloon and came down in a parachute, agreed to make me a varnished silk spherical balloon of 8000 cubic feet capacity. The total cost with car and fittings would be £100, but I was to have it till my "Vernon" course was ended for £50; then I could return it, or, if the Admiralty were favourably impressed, they could keep it by paying the other £50.

The next question was how to provide the gas as cheaply as possible. 8000 cubic feet of hydrogen, compressed in tubes, cost £40. Coal gas was much cheaper, but its smaller lifting power would necessitate a larger and less handy balloon. To make even a single filling of hydrogen by electrolysis, on board, would have needed the whole output of the "Vernon's" old-fashioned dynamos for several days—a proposal not likely to find favour. The laboratory method of using the action of sulphuric acid on zinc filings, and collecting the gas through water, was prohibitive on account of the high price of zinc. Eventually I found that iron could be used in place of zinc, provided that the sulphur was extracted from the gas by passing it through dry lime as well as water; tons of curly iron turnings could be had from the dockyard scrap-heap for nothing. So I adopted this method and set up a generating plant in a cooper's yard at Portsea. Four of the largest size brandy-casks, to take the iron and acid, were connected by iron piping to a similar cask to be filled with water. That, in turn, was connected to another cask fitted for the lime, with an outlet for a flexible pipe to lead the gas away to the balloon.

By no stretch of imagination could ballooning be connected with torpedo work, and so I was unable to obtain official permission to use the "Vernon's" island of Horsea with its useful workshops, air compressing plant, and other facilities. It could not be used unofficially,

for *if* my balloon ever went up it would be impossible to hide it. After some searching, I found a site on waste ground belonging to the chemical works at Tipnor, with a convenient jetty on the harbour. The manager, Mr. Briscoe, offered me every facility, such as barrows for transporting the heavy glass carboys of sulphuric acid from his works to the ground, and promised the use of his large, squat steam-barge to tow the balloon whenever I wanted it. The rest of the story is best told by extracts from letters, written at the time, in which the names are recorded of fellow torpedo-men and others who lent a hand. I should explain that our torpedo course was a strenuous affair, leaving no time but week-ends for the ballooning experiments, and that these free days were often useless owing to winter gales :—

To E.P.A.F.—7th January, 1900. “Trousdale¹ and I called the other day on Lord Charles Beresford, who was staying at Admiralty House, but unfortunately he was out. I wish my balloon was ready now so that I could ask him to go up in it, as I am pretty sure he would. I am still waiting for it to come from London.”

5th February, 1900. “Croker and I and my marine servant went out to the chemical works on Friday evening to get the gas-making plant ready. Spencer, who had brought the balloon from London, was there as well. We were working hard from 5 till 10 p.m.—snowing and blowing hard all the time. As we had to set up the casks in about six inches of water it was a very dirty job. On Saturday, Newton came out to help and we borrowed two men from the chemical works. A reporter from one of the Portsmouth rags came to find out all about it, so we commandeered him and made him carry buckets of lime till he was tired. All was ready by 5.0 p.m., but it was too late to start filling, so we knocked off for the day, and turned in early at a local pub close by.

“We began making gas at 6.30 Sunday morning. It was very heavy work recharging each cask with acid and water directly it ran down. All began well, but after an hour or two the casks began to leak a bit. In the afternoon the head of one of them went in and we lost a lot of gas. There was no time for lunch and we carried on till it was too dark to see.

“By 7.0 p.m. the balloon was two-thirds full, but not quite full enough to lift me, so we sent it up by itself without the car. Then it was hauled down and emptied, which seemed an awful pity. Everybody had worked splendidly, wheeling about iron turnings, carboys of acid,

¹ Both of us were Midshipmen with Lord Charles when he was Captain of the “Undaunted.”

sand, etc., and if it had not been for the head of that cask going in we should have got up. Though we did not succeed this time we had a very good try, and got so much experience that we shall make certain of it next time."

18th February, 1900. "I feel on a small scale, what General Buller must have felt when he wrote his dispatches saying he had again failed to get across the Tugela. This time it was entirely the fault of the weather and we lost no gas.

"Croker, Newton, and Dumaresq came out on Thursday evening, and we transported fresh iron turnings from a barge to the casks. On Friday we went out again and worked till 8.0 p.m. Both days it was blowing hard and raining, and the ground very slippery for wheeling the barrows about.

"On Saturday we turned out at 5.30 a.m. and had everything ready by 7.30, but it was still blowing hard and had been blowing a gale all night. So we went to breakfast at our pub. and I telephoned to the Meteorological Office asking for Sunday's weather forecast. They replied within an hour—'Easterly and South Easterly winds, strong, snow, and rain.' That finished it for both days. We hope to have another shot in a fortnight."

5th March, 1900. "The chief thing to be pleased about is the relief of Kimberley and Ladysmith. But I expect you will be glad to hear that we got the balloon up successfully on Saturday. The working party on Friday evening consisted of Croker, Newton, Dumaresq, a friend of Newton's called Douglas,¹ the "Vernon's" cooper, some men from the chemical works, and Spencer, who came down from London.

"At 5.0 a.m. we turned out at our pub. and went down to the ground, and I poured in the first can of acid at 6.0. The plant worked very well this time and hardly leaked at all. Having Newton's extra generating casks, we made gas much more quickly. We worked hard all the morning, getting our meals by watches. In the afternoon a large crowd collected from a football ground near by. A number of "Vernon" officers and others turned up, including some Japanese officers who seemed very much interested in the proceedings.

"The balloon was full by 2.30, and I made the first ascent at 3.0. It went up beautifully to the full extent of the captive rope, about 900 feet. I got a splendid view of the harbour below, the surrounding country, and Southampton Water. There was very little wind, and the balloon was fairly steady, though it went over to a bit of an angle

¹ A civilian son of the late Admiral Sir Archibald Douglas.

when being hauled down. There would have been ample reserve of buoyancy for towing.

"All the working party went up in turn, and a few others. Altogether there were ten ascents. With Spencer's patent captive car it lifted two of us easily, but with little reserve of buoyancy. The football crowd hauled the balloon down each time and enjoyed it, running away with the rope in fine style.

"Towards dark we secured the balloon down with sandbags for the night, with a watchman to look after it. I arranged with Mr. Briscoe for the chemical works steam-barge to tow me round the harbour next morning. I also hoped, if possible, to make a free trip towards Petersfield, and had the basket car with anchor, ballast, etc., all ready."

Unfortunately the Sunday's programme did not come off. On returning to the balloon next morning, we found that the action of our somewhat sulphurous hydrogen¹ had eaten away the internal varnish in places and a third of the gas had leaked away. Though we started filling at once, there was not enough fresh iron left to complete the job, and we had to pack up for the day, Spencer taking the balloon back to London to revarnish. The trouble was entirely due to not having used enough lime during the charging. My failure to be towed round the harbour in the air as arranged, the object of the whole business, was most disappointing. The free trip did not matter, though it would have been amusing.

Whilst waiting for the Dockyard iron scrap-heap to grow again, I arranged to try a week-end free trip on coal-gas from the yard of the Stamshaw gas works. But the weather again defeated us. Strong North-East winds persisted. We got the balloon up, captive, during a lull on the Sunday evening; Croker, Newton, the gas manager and myself each going up to 450 feet, which was as much rope as it would take on coal-gas. We swayed wildly about, the big, spiky gasometers below looking very unpleasant. It would have been perfectly safe for a free trip, but, since the wind would have taken me out to sea, I had to give it up.

As our "Vernon" course neared its end, I felt it useless to go on, and returned the balloon. By then I knew that the German Army was experimenting with the new Parseval kite-balloon, far more suitable for naval purposes than mine. I suggested that the Admiralty should buy one for trial, but, on completing the course, I soon became immersed in other interests.

¹ Although theoretically odourless, the fumes of our gas were smelt in Southsea.

Now for the moral! The War found us with no naval kite-balloon units for big ships or small, and no anti-submarine weapon but the gun. My idea in 1899, which related to cruiser reconnaissance work and coastal operations, had nothing to do with the torpedo school, whose staff were fully occupied with other important matters. But had there existed some special department at the Admiralty to consider semi-technical ideas such as mine, which were outside the scope of established technical departments, kite-balloon trials would surely have been ordered.

Two years later, our first submarine boats were being put into service to enable us to study methods of dealing with French submarines.¹ Had there been even one naval kite-balloon unit in being, it would obviously have been tried at once for locating them.

One thing leads to another: it is inconceivable that some officer, when hunting those slow, early submarines from the car of a captive balloon, would not have thought of the depth-charge as a means of finishing them off. Other developments would have followed; and had we started training with kite-balloons and depth-charges ten years or so before 1914, the course of the anti-submarine war would have been very different.

¹ There were no German submarines, because von Tirpitz did not then believe they were of any use.

THE REBIRTH OF THE GERMAN ARMY

(Note.—Articles on "Germany's New Navy" (p. 628) and "Germany's Air Force" (p. 514) appeared in the JOURNAL for August, 1935.)

BY article 160 of the Treaty of Versailles, the German military forces, as from 31st March, 1920, were not to comprise more than seven infantry and three cavalry divisions, a total force of 100,000 men. Moreover, in order to prevent large numbers of fresh men being passed through the army every year—thus building up a large trained reserve—special conditions for long-service were imposed. Nevertheless, in addition to the limited army allowed her by the Peace Treaty, Germany raised large numbers of uniformed, equipped, and partly-armed forces as para-military organizations. The exact figures of these latter are impossible to obtain, but it may be taken that on 30th January, 1933, the date of Herr Hitler's appointment as Reich's Chancellor, the numbers of partially trained men of various categories were as follows: Police, 140,000, of whom 35,000 were fully armed and equipped; Nazi "Brownshirts," about 400,000; Steel Helmets, national force of ex-service men, 180,000–250,000; Reichsbanner (Republican and anti-Fascist), composed largely of Socialist workmen and ex-service men of republican views, strength unknown; Volunteer Labour Corps, 250,000; National Athletic Board organization, training 40,000 young men annually (started 14th September, 1932); "Hosts of the Cross," a Centre Party organization; "Vikings," a Young German Order; "Werewolves"; and Tannenburg League; all numbering between them tens of thousands of partially trained young men.¹ The Reichswehr at this time numbered 100,000 fully trained men of very high quality.

On 11th February, 1933, only twelve days after the accession to power of Herr Hitler, the German Government announced its policy in regard to the motor industry and road-making. This included four main points:

¹ Vide *The Daily Telegraph*, 28th March, 1933.

- (1) Government interest in the motor industry to be linked up with the new Department for Air, under General Goering.
- (2) Gradual removal of taxation burdens.
- (3) A comprehensive plan for road building.
- (4) Furtherance of motor race meetings.

The foundation stone of a mechanized army was thereby well and truly laid, and the construction of strategic roads for its employment put in hand.

In May, 1933, it was announced that all young Germans, who completed their nineteenth year by 1st January, 1934, would constitute the first recruits for the compulsory Labour Army. The State Commissary for Labour Service declared: "After compulsory labour service should really come compulsory military service. If labour service is to become what we are all thinking of, our chief task is to create the right spirit for its leaders. The leader type of the old army will not suffice. There must be a dash of the artisan, a dash of the soldier, and a dash of juvenility in the new labour service leaders." During the same month, Baron von Neurath, the German Foreign Minister, declared that Germany must build a military and naval air-fleet and must equip the Army with guns of heavier calibre than those permitted in the Versailles Treaty. "It has become clear," he said, "that the strongly armed States, above all France and her Allies, were not ready to make concessions, and that they had no real intention of making effective reductions of armaments. The result of the fifteen months disarmament conference must be summed up as follows: the attempt to secure equality for Germany by the disarmament of others has failed and even under the British plan, Germany would be forced to add to her armaments in the two respects already indicated." General von Blomberg, the War Minister, also stated that the time for dictating to the Reich was now over. Germany did not desire to make difficulties but as a disarmed State in the midst of a heavily-armed Europe, she could not bow to an ultimatum on her defensive system.

On 14th October, 1933, Germany withdrew from the Disarmament Conference and from the League of Nations.¹ The official statement ran: "in view of the humiliating and dishonouring demands of the other Powers at the Geneva Disarmament Conference, the Government has decided that it can no longer participate in the discussions of the conference and, at the same time, has decided to notify the League of Nations of the Reich's withdrawal from that body."

¹ See "The International Situation" in the JOURNAL for November, 1933, p. 835.

On 1st February, 1934, the French Government published the text of the "*Aide Mémoire*" to Germany, which had been sent to Berlin a month before. The main points from the French memorandum were that France was prepared to reduce her effectives simultaneously with the reorganization of the Reichswehr into a militia, the French Army being similarly transformed, parity being attained progressively. The German reply, published on 18th March, 1934, stated, inter-alia, that France must include in the number of her effectives, the Colonial troops stationed so as to be available at home in case of need. Germany expressed herself willing to submit to an immediate supervision of her "Storm Troopers" if other countries would do the same and reassured France that the Locarno Treaty would be fully observed. These negotiations, which at one time seemed to be proceeding favourably, broke down chiefly over the two points of the inclusion of the French Colonial troops in the authorized total of French effectives, and the inclusion of the German para-military formations (Brown Shirts, Steel Helmets, etc.) in the German totals. It was, however, very unfortunate that no agreement could be reached, especially as the German offer to submit her forces to outside supervision presented solid advantages for peace.

On 9th April, 1934, the British Government announced that it had instructed the British Ambassador in Berlin to enquire of the German Government, the reason for increased expenditure on the Defence Services. The Army estimates, in particular, were alleged to have risen from £23,600,000 in 1933 to £32,350,000 in 1934. The German Government replied that no limitation of expenditure was laid down in the armaments clauses of the Versailles Treaty and that the increase was due to the extra cost of transforming the Reichswehr into a short service Army. The rebirth of the German Army may therefore be said to date from the beginning of 1934, during which year the necessary expansion of the Reichswehr began to enable it to provide the cadres of instructors and the framework for the future Nation in Arms. Moreover, on 3rd January, 1934, a new Reichswehr Commander-in-Chief was appointed. President von Hindenburg, on the proposal of the War Minister, General von Blomberg, nominated Lieutenant-General Werner Baron von Fritsch, the Commander of the Third (Berlin) Division of the Reichswehr, to succeed General von Hammerstein, as Commander-in-Chief. Baron von Fritsch was born in 1888. He served on the General Staff during the War and his promotion in the new Reichswehr after the War was extremely rapid. In November, 1930, he became a Major-General and obtained command of the First Artillery Division at Frankfort-on-Oder.

On 30th June, 1934, the great "purge" of the Nazi party took place, in which many prominent leaders were shot without trial. With the political aspects of the "purge," we are not concerned here, but the military results undoubtedly were to increase the power and prestige of the Reichswehr and to diminish the influence of the "Brown-Shirt" army.

On 2nd August, 1934, the Reichswehr took the oath of allegiance to their new Commander-in-Chief, Adolf Hitler. The oath was worded as follows: "I swear by God a sacred oath that I shall render my unconditional obedience to the Führer of the German Reich and people and Commander-in-Chief of the fighting forces, Adolf Hitler, and that I shall be ready as a brave soldier to risk my life at any time for the sake of this oath."

On 19th November, 1934, Mons. Archambaud, the War Budget *rapporteur* to the French *Chambre des Députés*, estimated that, by the middle of 1935, Germany would be able to put into the field, at short notice, about 5,000,000 trained men. This estimate was made up as follows: total Standing Army (composed of Reichswehr, 400,000; Police, 100,000; auxiliary troops in garrison, 100,000)—600,000. Reserves (including ex-soldiers and Hitler's Labour Army)—2,100,000. Semi-military formations, including Storm Troopers—2,800,000. These figures—probably much exaggerated—should not be taken too seriously. They may usefully be compared with those given by *The Daily Telegraph* some eighteen months previously. The period March, 1933, to November, 1934, was, however, a time of steady expansion of military strength, and a large increase over the figures of 1933 would naturally be expected. Ex-officers were called up for refresher courses in the Reichswehr. During the transition period, the new recruits were grouped in two main categories: (1) those taken direct from schools and universities, who served for eighteen months either as an alternative to the "voluntary labour service" or after completing it; and (2) men of twenty-five to thirty years of age, selected from the Storm Troops, Protective Guards, and Steel Helmets, who served for a period of from four to six weeks.

In January, 1935, the *Deutsche Wehrbeiträge* issued a semi-official statement heralding the intended introduction of conscription, stating that the way was now clear for a development which would once more make the army a school of the nation in the sense of Scharnhorst and Boyen. On 16th March, 1935, conscription was officially reintroduced into the German army and the German Cabinet passed a law fixing the strength of the Reichswehr at thirty-six Divisions, totalling about 500,000 men. The law which Herr Hitler and all other members of the Reich Cabinet signed is worded as follows:

" *Article 1.*—Service in the fighting forces is effected on a conscription basis.

Article 2.—The peace strength of the German army, including transferred military police, amounts to thirty-six divisions, grouped in twelve Army Corps.

Article 3.—The Minister of Defence (General von Blomberg) is authorized to take the steps necessary to carry out this law."

According to the *Revue Militaire Française* for September, 1935, the details of this law are as follows: the Leader and Chancellor is the supreme head of all the armed forces, but the executive command of these forces is exercised by the Minister of Defence—now called the Minister for War. The latter has, under his orders, the Commander-in-Chief of the Army, the Commander-in-Chief of the Navy (Admiral Raeder) and the Commander-in-Chief of Military Aircraft (General Goering). In peace, every German, male or female, between eighteen and forty-five years of age is liable for service. In war, these ages may be extended as required. In peace, active training for men begins at nineteen years of age with one year's labour service (at present six months). Military service for one year in the Reichswehr follows. The trained soldier then passes into the reserve, which consists of three classes:

The Reserve, which consists of trained men from twenty-one to thirty-five years of age.

The Ersatz Reserve; men from eighteen to thirty-five, who, for various reasons, have not had military training in the army.

The Landwehr; men from thirty-six to forty-five.

The Minister for War is authorized to retain with the colours men whose legal term of service has expired, and can call up, if he wishes, any or all of the three categories of reserves.

All men over forty-five, when called out by the Minister of War in war-time, will form the *Landsturm*.

He can, therefore, by merely issuing an executive decree, increase the strength of the army to any extent, and can in fact mobilize the army, without publicly appearing to do so, by calling up the Reserves for an indefinite period of military training. Germany is thus in a position, if she so desires, to conceal her preparations and disguise her intentions in order to bring about a complete and overwhelming surprise. The British, French, and Italian Governments protested against this unilateral breach of the Versailles Treaty, but it is presumed that these protests were only of a formal nature as, of course, no tangible result could be expected from them.

On 22nd May, 1935, the Conscription Law was amplified by a Defence Law, which included provisions regarding Aryan origin and

regulations relative to marriage with non-Aryans. The regulations laid down that the conscript soldier should not take part in politics during his twelve months military service. If a member of the Nazi party, he must suspend all party activities and would not be entitled to vote at an election or plebiscite.

On 26th June, 1935, the Cabinet passed the Bill introducing compulsory labour service, to precede the term of military service. The Bill affected males only but labour service regulations for females will be introduced later. The term of labour service was fixed temporarily at six months and an authorized total of 300,000 men, including staff and employees, was to be called up during the period October, 1935, to September, 1936.

On 30th September, 1935, the Press announced the new organization of the army. Three Army Headquarters have been formed at Berlin, Cassel, and Dresden respectively. According to the *Revue Militaire Française* for January, 1936, there are ten Army Corps, consisting of twenty-four divisions, located as follows :

1st Corps, H.Q., Koenigsberg ; 1st Division, Koenigsberg ; 11th Division, Allenstein ; 21st Division, Elbing.

2nd Corps, H.Q., Stettin ; 2nd Division, Stettin ; 12th Division, Schwerin.

3rd Corps, H.Q., Berlin ; 3rd Division, Frankfort-on-Oder ; 13th Division, Magdebourg ; 23rd Division, Potsdam.

4th Corps, H.Q., Dresden ; 4th Division, Dresden ; 14th Division, Leipzig ; 24th Division, Chemnitz.

5th Corps, H.Q., Stuttgart ; 5th Division, Ulm ; 15th Division, Wurzburg.

6th Corps, H.Q., Muenster ; 6th Division, Bielefeld ; 16th Division, Muenster.

7th Corps, H.Q., Munich ; 7th Division, Munich ; 10th Division, Ratisbon ; 17th Division, Nueremburg.

8th Corps, H.Q., Breslau ; 8th Division, Oppeln ; 18th Division, Liegnitz.

9th Corps, H.Q., Cassel ; 9th Division, Giessen ; 19th Division, Hanover.

10th Corps, H.Q., Hamburg ; 20th Division, Hamburg ; 22nd Division, Bremen.

H.Q. of Cavalry Divisions are : 1st Cavalry Division, Potsdam ; 2nd Cavalry Division, Breslau ; Independent Cavalry Brigade, Insterburg.

Besides the above formations, "armoured units" have been organized, but their locations are not yet fixed.

The new German army, it will be noticed, falls far short of the thirty-six divisions authorized by the Law of 16th March, 1935, but more divisions will probably be raised in the former demilitarized zone of the Rhineland. Arrangements will, no doubt, be made in the near future for the duplication on mobilization of regular divisions by reserve divisions on the same lines as in 1914, and for the incorporation of the latter in the Field Army. On mobilization, the German army would then consist of seventy-two divisions, with two or three cavalry divisions and an unspecified number of armoured units. But this goal is still some way off and several years of hard work, training and organization will be required to reach it.

A few facts regarding man-power may be of interest. The population of Germany, in round figures, is 66,000,000, and the density per square mile is 366. This may usefully be compared with her Eastern neighbour, Poland, with a population of 32,000,000 and a density of 213 per square mile, and her Western neighbour, France, the population of which is 41,000,000, and the density per square mile only 192. The first batch of German conscripts called up for training at the end of 1935 were men born in 1914. These numbered 598,000, but it is believed that only about half of them were actually nominated for training. Shortage of officers and difficulties over barrack accommodation accounted for this. These handicaps should be overcome within two years, after which the full numbers of men available will, no doubt, be called up and trained.

The following statistics, taken from *La Revue Militaire Française* for January, 1935, show the numbers in round figures of Germans available for service during the next ten years :

Year of Birth.	Number of Men aged twenty		During.
	available.		
1915	460,000	.. ..	1935
1916	350,000	.. ..	1936
1917	313,000	.. ..	1937
1918	326,000	.. ..	1938
1919	480,000	.. ..	1939
1920	630,000	.. ..	1940
1921	618,000	.. ..	1941
1922	570,000	.. ..	1942
1923	540,000	.. ..	1943
1924	538,000	.. ..	1944

The five war years from 1915 to 1919 produce, it will be noticed, much smaller numbers than the normal and are known as the "lean" or

"hollow" years. The same factor is, of course, at work in the population of all those nations, which took a serious part in the Great War. By 1944, therefore, the total number of fully-trained men between twenty and thirty years of age—the best ages for active service—should exceed 5,000,000 and the German army may by then have reached its greatest strength and development.

It is possible however to make this calculation of dates on a different basis. By calling up all men born between 1914 and 1919 for one year's military training during the period 1935 to 1939 and by giving short courses of instruction during the same period to men born between 1910 and 1913, a total of about 4,900,000 men (one half fully-trained and one half partially-trained) could be placed in the field by 1939. But an army composed of these latter would not be up to the high standard which the German General Staff demands of its troops, and might be inferior in training to its probable opponents. This is a situation which the General Staff could not accept, unless unavoidable, and one which, in war, would naturally give them great anxiety. Armaments, it should be remembered, can be piled up more rapidly than men can be trained to work them, and once factories reach full war production, trained men fit for the field are the limiting factor.

In place of the five lower Washington Treaty of 1922 and the London Naval Treaty of 1930, which remain on first December, 1939, there will then be the Four Power Treaty. The new Treaty, it is expected, will come into force on 1st January, 1940, and will be "open to accession" by Japan and Italy. It is also anticipated that a bilateral agreement may be come to with Germany, and possibly with other naval powers.

It will normally remain in force until 1st December, 1941—a period of six years.

A comparison may be made between the terms of the Treaty: (a) In the event of war, and the naval requirements being materially affected.

(b) If a lower limit is not a signatory of the Treaty should acquire or protect vessels not in conformity with the limits and restrictions of the Treaty, all or various foreign ships should his national security be "materially affected by any change of circumstances other than those mentioned above or . . . in respect of the Treaty's validity" (see Annex).

The Article of the Treaty will be found in a White Paper (Cmd. 512). An explanatory Memorandum on the Naval Conference is contained in a supplementary document (Cmd. 513).

THE INTERNATIONAL SITUATION

THE SECOND LONDON NAVAL TREATY

A TREATY for the "Limitation of Naval Armament" was signed in London on 25th March, 1936, by representatives of His Majesty's Government in the United Kingdom, Canada, the Commonwealth of Australia, New Zealand, and India; the President of the United States of America; and the President of the French Republic. The Treaty still has to be "ratified" by these contracting Powers.

Italy, whose representatives took part in the Conference, although not on the whole averse to the terms of the Treaty, declined to sign while she was treated as an outcast and inflicted with "sanctions."

Japan, as recorded in these Notes in February, withdrew from the Conference when her proposal for a "common upper limit" was rejected by the other delegations. It will be recalled that she gave formal notice on 29th December, 1934, to terminate the Washington Treaty.

In place of the Five-Power Washington Treaty of 1922 and the London Naval Treaty of 1930, which expires on 31st December, 1936, there will, then, be this Three-Power Treaty. The new Treaty, if it is ratified, will come into force on 1st January, 1937, and will be "open to accession" by Japan and Italy. It is also anticipated that a bilateral agreement may be come to with Germany, and possibly with other naval Powers.

It will normally remain in force until 31st December, 1942—a period of six years.

A Contracting Party may claim release from the terms of the Treaty:

- (a) In the event of war and his naval requirements being materially affected.
- (b) If a Power which is not a signatory of the Treaty should acquire or project vessels not in conformity with the limitations and restrictions of the Treaty.
- (c) Should his national security be "materially affected by any change of circumstances other than those mentioned above, or . . . in respect of the 'cruiser holiday'" (see Cruisers).

¹ The Articles of the Treaty will be found in a White Paper (Cmd. 5136). An explanatory Memorandum on the Naval Conference is contained in a supplementary document (Cmd. 5137).

Three months notice is required before departing from the Treaty, except in the case of war.

QUALITATIVE LIMITATION.

The whole system of "ratios," which formed the basis of the Washington Treaties, and which, to a considerable extent, was extended in the first London Treaty, goes by the board at the end of 1936, and forms no part of the new Treaty.

National fears and prides made it impossible to renew or adjust the limitations which have largely governed the numerical strength of the different classes of ships in the Five Navies for the past fourteen years. Britain, in company with other nations, is once more free to build as many ships as she requires of every type, subject only to certain qualitative restrictions. Nevertheless, by an interchange of letters between Mr. Norman Davies—head of the U.S. Delegation—and Mr. Eden, a "gentlemen's agreement" was entered into whereby Great Britain and the United States undertake not to engage in competitive building.

QUALITATIVE RESTRICTIONS.

DEFINITIONS.

Standard Displacement.—In the case of a surface ship, "standard displacement" means the displacement when complete, fully manned, engined, and equipped for sea; it includes all armament, ammunition, equipment, outfit, provisions, fresh water for crew, miscellaneous stores and implements of every description to be carried in war; it does not include fuel or reserve feed water.

In the case of a submarine, it has a similar interpretation for the "surface displacement"; it does not include fuel, lubricating oil, fresh water or ballast water.

The word "ton" denotes 2,240 lbs. (1,016 kilos), except where "metric ton" is specified.

Capital Ships.—These are divided into two sub-categories:—

- (a) Surface vessels of war, other than aircraft carriers or auxiliary vessels which exceed 10,000 tons standard displacement, or which carry a gun exceeding 8-in. (203 mm.) calibre.
- (b) Surface vessels of war, other than aircraft carriers, which do not exceed 8,000 tons, and which carry a gun with a calibre exceeding 8-in.¹

Aircraft Carriers are surface vessels of war, whatever their displacement, designed or adapted primarily for the purpose of carrying and operating aircraft at sea. The fitting of a landing-on or flying-off deck to a vessel, unless it has been designed or adapted primarily for the purpose of carrying and operating aircraft at sea, shall not cause it to be classified in the category of aircraft carriers.

¹ Examples of this type are the British monitors "Terror" and "Erebus," which displace 7,200 tons and carry a pair of 15-in. guns.

Aircraft carriers are divided into two sub-categories :—

- (a) Vessels fitted with a flight deck, from which aircraft can take off, or on which aircraft can land from the air.
- (b) Vessels not fitted with a flight deck as described in (a) above.

Light Surface Vessels are vessels of war other than aircraft carriers, minor war vessels or auxiliary vessels, the standard displacement of which exceeds 100 tons (102 metric tons) and does not exceed 10,000 tons (10,160 metric tons), and which do not carry a gun with a calibre exceeding 8-in. (203 mm.).

They are divided into three sub-categories :—

- (a) Vessels which carry a gun with a calibre exceeding 6.1-in. (155 mm.).¹
- (b) Vessels which do not carry a gun with a calibre exceeding 6.1-in. (155 mm.) and the standard displacement of which exceeds 3,000 tons (3,048 metric tons).²
- (c) Vessels which do not carry a gun with a calibre exceeding 6.1-in. (155 mm.) and the standard displacement of which does not exceed 3,000 tons (3,048 metric tons).³

Submarines are all vessels designed to operate below the surface of the sea.

Minor War Vessels are surface vessels of war, other than auxiliary vessels, the displacement of which exceeds 100 tons and does not exceed 2,000 tons, provided they have none of the following characteristics :—

- (a) Mount a gun with a calibre exceeding 6.1-in.
- (b) Are designed or fitted to launch torpedoes.
- (c) Are designed for a speed greater than twenty knots.⁴

Auxiliary Vessels are naval surface vessels the displacement of which exceeds 100 tons, which are normally employed on fleet duties or as troop transports, or in some other way than as fighting ships, and which are not specifically built as fighting ships, provided they have none of the following characteristics :—

- (a) Mount a gun with a calibre exceeding 6.1-in.
- (b) Mount more than eight guns with a calibre exceeding 3-in.
- (c) Are designed or fitted to launch torpedoes.
- (d) Are designed for protection by armour plate.
- (e) Are designed for a speed greater than twenty-eight knots.
- (f) Are designed or adapted primarily for operating aircraft at sea.
- (g) Mount more than two aircraft-launching apparatus.

Small Craft are naval surface vessels the standard displacement of which does not exceed 100 tons (102 metric tons).

OVER AGE.

Vessels of the following categories and sub-categories shall be deemed to be "over age" when the undermentioned number of years have elapsed since completion :—

¹ This sub-category includes all 8-in. cruisers.

² This sub-category includes all existing cruisers, other than 8-in.

³ This sub-category includes the French super-leaders, and all other leaders and destroyers.

⁴ Sloops are typical of this category.

Capital ships	..	..	..	..	..	26 years.
Aircraft carriers	..	..	..	..	..	20 years.
Light surface vessels, sub-categories (a) and (b) :						
(i) if laid down before 1st January, 1920	..	..	..	..	..	16 years.
(ii) if laid down after 31st December, 1919	..	..	..	..	..	20 years.
Light surface vessels, sub-category (c)	..	..	..	..	..	16 years.
Submarines	..	..	..	..	..	13 years.

CAPITAL SHIPS.

The British effort to get the size of capital ships reduced was defeated by the insistence of the United States that their navy's needs could not be provided in this class on less than the present 35,000 tons, which remains the maximum displacement.

It was agreed, however, that the maximum calibre of the gun-armament should be limited to 14-in., instead of the existing 16-in., with the proviso that, if any of the original Washington Powers should fail to accept this provision by 1st April, 1937, then the size will revert to 16-in. This is clearly a safeguarding clause in case Japan should not conform to the Treaty.

A "zone of non-construction" (8,000 to 17,500 tons) has been agreed to, together with the prohibition of guns of less than 10-in. calibre for the main armament of capital ships. These restrictions are designed to prevent the introduction of a type of vessel which would have been within the definition of a capital ship, but in reality a superior cruiser.¹

AIRCRAFT CARRIERS.

The maximum displacement of aircraft carriers has been reduced from the 27,000 tons of the Washington Conference to 23,000 tons. It is pointed out in the Memorandum, however, that although this will result in appreciable saving in the cost of individual ships, it will entail increased expense in the long run because the embarkation of a similar number of aircraft will necessitate more of the smaller carriers.

The gun armament may not exceed 6.1-in. in calibre, or ten in number, if the calibre is more than 5.25-in.

CRUISERS, ETC.

The 10,000-ton cruiser, whether armed with 8-in. or 6-in. guns, is eliminated from building programmes during the period of the Treaty. This is the so-called "holiday."

¹ It will be noticed that, as regards tonnage, the German "Deutschlands" are in the "zone of non-construction," although they carry 11-in. guns.

The maximum displacement for cruisers will be 8,000 tons with 6.1-in. guns.

Leaders and destroyers are now classified with cruisers as "Light Surface Vessels." This has been done because Britain, the United States, and Japan alone of the naval Powers accepted separate categories for the two latter classes. France, particularly, refused to conform to the limitations on torpedo craft agreed to by those three Powers in the London Treaty, and has built or is building thirty-two ships of nearly 2,500 tons, armed with five 5.4-in. guns—a type which we could only match by vessels in our "cruiser" category; and, whereas the latter have been rigidly limited in numbers, France has not suffered from any such restrictions.

On 1st January, 1937, therefore, we shall be able to build as many cruisers, leaders, and destroyers as we need, provided, only, that they do not exceed the new maximum limits. This would seem to be the most satisfactory feature of the Treaty, and it is to be hoped that full advantage will be taken of it.

It is emphasized that the restrictions on tonnage "constitute no undertaking expressed or implied" after the year 1942; moreover, if the national security of a contracting Power appears to be adversely affected by either the number or type of light surface vessels being acquired by another Power, he may, on giving the requisite notice, revert to the 10,000-ton type.

SUBMARINES.

As was fully anticipated, the British proposal to abolish submarines or else limit them to 250 tons proved quite impracticable, and there will be no change from the 2,000-ton and 5.1-in. gun restrictions of the 1930 London Treaty.

ARMED MERCHANT SHIPS.

No preparations may be made during time of peace for installing warlike armaments in merchant ships other than stiffening of decks to enable guns not exceeding 6.1-in. calibre to be mounted.

ADVANCE NOTIFICATION AND EXCHANGE OF INFORMATION.

A new feature in this Treaty is the agreement between the Contracting Parties that they will notify each other in advance of their building programmes. The main provisions are:

- (a) The annual programme of construction or acquisition of the principal classes of warship, giving the calibre of the largest

gun to be carried by each vessel, will be communicated within the first four months of each calendar year.

After this, there can be no increase in the number of vessels so declared during the current year—subject only to the safeguarding clauses, mentioned at the beginning of this summary.

No vessel of the principal classes of warship may be laid down until after the lapse of four months from the date of such communication.

- (b) Full information as to the characteristics and main details of each ship will be given before she is laid down.

Advance notification is not required in the case of Auxiliary Vessels or Minor War Vessels, but lists of them will be exchanged annually.

All information exchanged will be treated as confidential until published by the Power who supplied it.

SUBMARINE WARFARE.

The Rules contained in Part IV of the London Treaty, 1930, prohibiting unrestricted submarine warfare became binding on all the Members of the British Commonwealth of Nations, the United States of America, and Japan, when they ratified that Treaty. France and Italy, who did not do so, have now signified their desire to subscribe formally to these Rules, and a separate "instrument" has been prepared for signature. It is proposed that, in due course, these Rules shall be communicated to all other maritime countries with an invitation to accede to them without any time limit.¹

BRITISH POLICY REGARDING RETENTION OF CRUISERS AND DESTROYERS

ON 28th May, in a debate in Committee of Supply on the Supplementary Navy Estimate, the Parliamentary Secretary of the Admiralty—Lord Stanley, explained the action taken by the Admiralty under the terms of the London Treaty of 1930.

If no further scrapping were to take place, we should possess on 31st December next 20,000 tons of cruisers over our given agreed figure. It was decided to keep the three cruisers of the "Hawkins" class,

¹ It should be noted that there are still no restrictions of any kind on the use of aircraft against merchant shipping in war.

but as they would be in excess of the number allowed under sub-category (a)—cruisers with guns above 6.1 in.—it was further decided to convert them into sub-category (b) by replacing their 7.5-in. guns by guns not exceeding 6.1 in., and scrapping in their place the necessary tonnage of older and smaller ships, viz., the “Caledon,” “Calypso,” “Caradoc,” “Ceres” and “Cardiff”—all nineteen years old.

The position under the 1930 Treaty as regards cruisers and that as regards destroyers are in no way comparable, Lord Stanley added. With respect to destroyers, we made a definite reservation in the White Paper accompanying the Treaty that we should have to increase our destroyer tonnage if existing submarine programmes were not reduced.

In May the Government approached their co-signatories of Part III of the Treaty with an informal proposal to retain 40,000 tons of destroyers due to be scrapped this year. The reply of the United States was that, since the Treaty provided means for dealing with such a contingency, such means should be followed. Accordingly, on 15th July, a note was handed to the United States and Japanese Ambassadors in London formally invoking Article 21 of the Treaty (the “escalator” clause), to permit the retention of this tonnage.

On 16th July, it was reported from Washington that Admiral Standley, acting Secretary of the Navy, had said that the United States would similarly retain 40,000 tons of her destroyers due for scrapping. “We will match the British,” he added, “as is provided by the Treaty.”

THE AFTERMATH OF THE ITALIAN CONQUEST OF ABYSSINIA

IT was recorded in these Notes last quarter that on 5th May the Italian forces entered Addis Ababa; the Emperor, Haile Selassie, having fled with his family and entourage three days previously. During the interval when there was no effective government, a reign of terror existed in the capital, and thousands of refugees sought refuge in the British and French Legations, which were in a state of siege for some days. The Imperial Palace, by the Emperor's orders, was thrown open and looted. The French Minister appealed to his government for aid, and it was at the urgent request of M. Flandin that Signor Mussolini gave orders to Marshal Badoglio to occupy Addis Ababa with all speed.

On 9th May, Mussolini announced that:

- (i) “The territories and the peoples that belonged to the Empire of Abyssinia are placed under the full and entire sovereignty of the Kingdom of Italy.

- (ii) "The title of Emperor has been assumed for himself and for his successors by the King of Italy."

Marshal Badoglio was appointed Viceroy and Governor General of Abyssinia.

Italy has yet to consolidate her position in Abyssinia, but the essential fact remains that, in the face of the whole moral force of the League of Nations and despite such economic sanctions as it proved possible to apply, she has won a war of aggression and now has a free hand to make what she can of her vast conquest. Whether it will prove to be an economic asset only time can show.

THE LEAGUE OF NATIONS

Since its initiation, the League of Nations has suffered many humiliations. These have been regarded by many people as being in the nature of growing pains; but the Italo-Abyssinian affair, it was proclaimed again and again, must be considered an "acid test" of the League's efficiency. Under that test:—

- (1) It failed to prevent a war which had been definitely designated one of aggression.
- (2) It failed to provide "collective" or any other form of security for one of its own members who was the victim of an aggressor (incidentally, also a member).
- (3) It failed to support with "a ship, a machine, or a man" the one nation, Great Britain, which went to the utmost limits of her obligations under the Covenant.
- (4) It failed to secure the unanimous application of "sanctions" against the aggressor by all its members.
- (5) It failed to obtain agreement amongst its members to be ready to support the application of sanctions with military force, without which they could not succeed.
- (6) It failed to stop a war of aggression.
- (7) It was unable to negotiate terms of peace "within the Covenant," or without the Covenant.

Even its most ardent and idealistic admirers are now compelled to admit that the League, as at present constituted, must be "reformed"!

SANCTIONS

Sanctions against Italy were adopted on 18th November, 1935. They were raised on 15th July, 1936. It proved impossible to include oil amongst the commodities on which there was an embargo, chiefly due to the fact that the United States would have been no party to such a decree.

On 29th May, the Argentine fluttered the dovescots at Geneva, where the League was seeking a "save face" policy, by bluntly demanding a special meeting of the Assembly in June to consider the whole situation in Abyssinia, "including the question of Sanctions." It was obvious that unless something was done in the matter there would soon be many more defections, and the coherence of League membership would be further weakened. Idealism might urge the application of increased pressure on Italy to make her drop the bone of contention; but common sense emphasized increasingly that such a policy was impracticable.

On 18th June, Mr. Eden—Foreign Secretary, announced in the House of Commons that it was the intention of the Government, once again, to give a lead to the League; this time it would take the form of advocating the abandonment of the policy of Sanctions. "We have to admit," he said "that the purpose for which Sanctions were imposed has not been realized. The Italian military campaign succeeded. That is a situation which has got to be faced. It is a situation which nothing but military action from outside the country can reverse."

On 6th July, the Co-ordinating Committee of the League decided to raise Sanctions against Italy as from 15th July. Poland forestalled this decision by presenting a note to the Italian government on 27th June declaring that she had unconditionally abandoned Sanctions as from that date; on the same day Nicaragua, following Brazil, Costa Rica, Honduras, Guatemala, and Paraguay, notified her intention of leaving the League.

On 15th July the end of the policy of Sanctions was celebrated by national rejoicings in Italy and a typical speech of exultation by Mussolini to a cheering crowd in the Palazzo Venezia in Rome.

The question of whether Sanctions would have seriously crippled Italy if Abyssinian resistance had been prolonged is now a purely academic one; but there is no doubt that her military success was achieved far more speedily than was generally expected and in the nick of time before the rainy season, and that it was in no way delayed through her inability to secure vital commodities. Unquestionably Italy has been feeling the financial pinch, and especially the failure of her credit: without credit no Power can make war indefinitely unless it is completely self-contained. On the other hand, Sanctions imposed a considerable strain on the loyalty of many members to the League. Some failed to stand that strain, and if it had been greatly prolonged, there would almost certainly have been other defaulters.

This experiment in the use of economic Sanctions as a League weapon, seems to indicate that, in future, nations will be less and not

more, ready to subscribe to a policy which meant material loss to themselves and which failed to restrain an aggressor. Mr. Baldwin has been proved to have been right when he said that Sanctions, if they are to be effective, must mean war; and the League members were not prepared to go to war to save Abyssinia from Italy—that is the whole position in a nutshell. Furthermore, everything points to the fact that, in spite of an immense amount of lip service to “the cause of peace” and “collective security,” the great majority of nations are still only prepared to go to war in national, and not in international, interests.

GREAT BRITAIN

Many people in this country felt that the outcome of the Italo-Abyssinian war was “humiliating” to Britain. This was largely due to ignorance of our position and to distorted psychology.

We, as a nation, have every reason to be proud of the fact that, having given our word as a member of the League, we fulfilled our obligations to the utmost. There is no reason why we should feel humiliated because the other members of the League failed us, and because Italy profited by that failure.

It should be fully appreciated, too, that we could not have gone further than we did, either as a loyal member of the League, or in our own interests, without exceeding our obligations and becoming an “aggressor” ourselves. No matter what the danger to the Empire might have been, we were not free to take independent action to prevent Italy from occupying Abyssinia: that is what it means to tie our foreign policy to the League of Nations, and that is the lesson which we should learn from recent events. We have not yet placed our armed forces at the disposal of an international committee; but in great measure we have subordinated our freedom to use them to the League—even though that might prove fatal to British interests. Therein we may well find reason to feel humiliated and to remain anxious.

DANZIG

By MAJOR B. T. REYNOLDS, M.C., late R.A.

AT almost any time between the close of the War and the advent to power of Hitler and National Socialism in Germany, the Free City of Danzig was regarded as one of the danger spots on the new map of Europe, where a chance spark might cause an explosion. In January, 1934, when a Pact of Understanding was signed by Hitler and Pilsudski, German-Polish relations, and with them the perennial

conflict between the two races in Danzig, appeared to have entered on a new and more peaceful phase. But recent events in Danzig and at Geneva have shown that such hopes were premature. It is now clear that there is as much explosive material in Danzig as ever there was—perhaps more.

ORIGIN OF THE FREE CITY.

At the Peace Conference, after the momentous decision had been taken to place the independent national State of Poland on the map of Europe, from which it had been absent for more than a century, the question arose of securing her access to the sea. Poland was given the famous Corridor and, as Danzig was the only port in the area, she asked that it might be handed over to her. Since, however, 96 per cent. of the inhabitants of Danzig were German, the Allied Powers could not agree to this, and a compromise was reached by which Danzig was established as a Free City. The Powers then set about providing it with a Constitution and arranging the basis of its future relations with Poland.

The Constitution, which is guaranteed by the League of Nations, provides for a Legislative Assembly elected by universal suffrage, called the *Volkstag*. This body, in its turn, elects the Senate, whose President acts as the head of the State. The *Volkstag* is the legislature. The Senate is the executive. Plebiscites may be held on the demand of one-tenth of the voters, and a two-thirds majority is required in the *Volkstag* for any measure involving a change in the Constitution. Finally, the League is represented in Danzig by a High Commissioner, whose duty is to deal with all differences arising between Poland and the Free City in regard to the Treaty of Versailles, and all treaties or arrangements concluded between them. The High Commissioner is appointed by the League for a period of three years.

The relations of Poland with the Free City are regulated by a Treaty signed in November, 1920. The outstanding points of this instrument, which is still in force, are :—

- (1) Danzig is included in the Polish Customs area.
- (2) Poland undertakes to conduct the foreign relations of Danzig.
- (3) Relations between the two governments are conducted through a Polish diplomatic representative stationed at Danzig.
- (4) The port of Danzig and its railway connections are placed under a Port and Waterways Board, composed of 5 Polish and 5 Danzig representatives, with a neutral Chairman appointed by the League.

- (5) The Free City undertakes to apply the same conditions to the Polish minority in Danzig as those applicable to minorities in Poland under the Polish Minority Treaty of June, 1919.

THE EXTERNAL CONFLICT.

Given goodwill on both sides, the above arrangement might have worked to the mutual advantage of Danzigers and Poles, both of whose economic interests were admirably served by it. The fact that it has always worked exceedingly ill is due primarily to psychological factors having their origin in the long history of bad relations between Slav and Teuton in this part of the world, the facts of the Polish Partition in the XVIIIth century, and the experiences of the Poles whilst a subject race to Prussia for over a century prior to 1918.

Although it was obvious from the beginning that the commercial prosperity of the port was bound up with Poland, the Danzigers have never ceased to look forward to the day when their city would return to the Fatherland. They have never pursued a "Danzig" policy, but always a "German" one. As early as 1920 an incident occurred to show that they were eager to seize on Poland's danger as their opportunity. When the Bolsheviks were at the gates of Warsaw and the Polish army was in desperate straits for ammunition, the Danzig dock workers refused to handle a ship-load of munitions in the port. The ship was finally unloaded by British troops under the orders of the British High Commissioner, and the ammunition arrived in Warsaw in time.

But the Poles, whose only independent means of communication with the friendly countries of Western Europe lay over Danzig and the sea, took the incident to heart. As a result of it they demanded and obtained a special area in the port where munitions could be handled and stored under their own control—the Westerplatte; they also set about building and equipping a new port of their own at Gdynia.

Incidents due to the treatment of Polish nationals by the Danzig authorities, the excessive number of official posts in the Free City created and staffed by Germans from the Reich, the receipt by the Danzig administration of subsidies from Berlin and suchlike matters, have given rise to constant complaints and recriminations at Geneva. But the bitterest pill that the Danzigers have had to swallow has been the sight of the rise of an entirely new port within a few miles of their own. The following table¹ shows the position:—

¹ This Table is taken from the "*Bulletin of International News*", Vol. XIII., No. 2. Published by Chatham House.

*Cargoes Entered and Cleared (Imports and Exports combined—
in Thousands of Metric Tons).*

	Danzig.	Gdynia.
1913	2,116 ..	Nil
1924	2,375 ..	10
1925	2,723 ..	55
1926	6,300 ..	414
1927	7,898 ..	896
1928	8,616 ..	1,960
1929	8,560 ..	2,823
1930	8,213 ..	3,626
1931	8,331 ..	5,300
1932	5,476 ..	5,914
1933	5,153 ..	6,106
1934	6,369 ..	7,192
1935	5,093 ..	7,474

The construction of the all-Polish port only commenced in 1923, but by 1932 its trade was already greater than that of Danzig, and it has continued to expand since. On the other hand, it should be observed that Danzig's trade is still more than twice as large as before the War, whereas in the years 1928-1931 it was actually four times its pre-War volume.

It is interesting to compare with the above the corresponding figures for the three other Baltic ports nearest to Danzig :—

Stettin (Prussia)	5,750	Year 1934
Koenigsberg (East Prussia)	2,750	„ 1934
Memel (Memel Territory : Lithuania)	971	„ 1935

THE INTERNAL CONFLICT.

The internal politics of the Free City all along conformed very closely to those in the Reich. The various German parties fought one another with considerable bitterness, although all were united in their common opposition to the Poles. The Senate was captured by the Nazis as long ago as 1931. But it was not until the elections of May, 1933, that they secured a bare majority in the *Volkstag*. The immediate result was a slackening of the tension with Warsaw, combined with an intensive campaign against the Opposition parties and the trade union movement in the Free City.

In February, 1935, the *Volkstag* was dissolved and fresh elections held. The Nazis now made strenuous efforts to secure the two-thirds majority required to enable them to change the Constitution. General

Goering, Dr. Goebbels, and Herr Hess arrived in the Free City and assisted in the electoral campaign. The Opposition complained that their voters were being intimidated, and a proportion of the Nazi votes were subsequently invalidated by a decree of the Supreme Court. The Nazis failed to obtain their two-thirds majority, but this did not deter them from continuing to prosecute their feud with the Opposition parties and their supporters by any and every means in their power.

The principal obstacle that stood between the Nazis and the realization of their programme of annihilating the opposition was the Constitution, and the inevitable result was that they came into bitter conflict with Mr. Lester, the High Commissioner—the representative on the spot of the League—the guarantor of the Constitution.

The conflict gradually developed to the point where the officers of the German cruiser "Leipzig," on a visit to Danzig, were forbidden by their government from attending an official reception given by the High Commissioner, and Herr Greiser, the President of the Danzig Senate, expressed himself with more force than politeness at the Council meeting at Geneva in July of the present year. Herr Greiser put the real matter at issue in a nutshell when he declared that he was speaking "on behalf of 400,000 Germans who did not wish to regard themselves as bound eternally to the League of Nations."

THE PRESENT POSITION.

The conflict in Danzig to-day is between Germany and the League. It is obviously bad for Nazi prestige that the world should be given the spectacle of the continued existence in Danzig of those German Opposition parties that have ceased to exist in the Reich. But the League, as the guarantor of the Constitution, finds itself in the position of the guardian of their rights and liberties. The League Council finally adopted a resolution at their July meeting requesting the Polish Government to deal with recent incidents through diplomatic channels. It will be interesting to see whether such measures have any effect, and also what the result will be on Polish-German relations.

Here we come to the real root of the matter. What policy is a rearmcd Germany going to pursue in North-Eastern Europe; and can Poland afford to allow the Free City of Danzig to rejoin the Reich without putting up a fight to prevent it?

As regards the first question, the reader can be referred to Hitler's own exposition of his policy in *Mein Kampf*. There is no doubt that Germany intends to expand. Whether this will occur peacefully or otherwise, and what direction it will take depend to a great extent on circumstances. Peaceful means will, of course, be preferred. Recent

events in Austria show that the possibilities of peaceful expansion in a south-easterly direction are not by any means exhausted. If Danzig were to join East Prussia and be excluded from the Polish Customs system it is obvious from the table given above that this would mean the economic death of the port. Further, a glance at the map is sufficient to show that the Poles would be forced to do everything in their power to prevent the union if they value the maintenance of their access to the sea. That they do so is obvious, for on it depends their continued existence as an independent sovereign State.

All things considered, it is unlikely that, at this stage, the Germans are desirous of pushing matters to their logical conclusion in north-eastern Europe; nor would such a course appear likely to recommend itself to the Poles, the only ultimately effective guardians of League interests in this part of the world. Neither of these responsible agencies are likely to take any action calculated to touch off the Danzig powder barrel, but there always remains the risk that it might be exploded through the action of irresponsible individuals. The only possible compromise solution appears to lie along the lines of the modification or abolition of the Constitution and the elimination of the League from the affairs of the Free City. Then, with the opposition parties eliminated, Warsaw might find herself able to settle all outstanding differences with a Nazi Danzig—at the good pleasure of Berlin. This is probably what the Germans are playing for.

Situated as she is between Germany and Russia, and united by a precarious line of communications to the Western democracies to whom she owed her rebirth in 1918, Poland is obliged to maintain friendly relations with one or other of her two great neighbours; she cannot afford the luxury of falling out with both simultaneously. Regarding the position in which his country was placed as a choice of evils, Pilsudski delayed as long as possible before making a decision. The rearmament of Germany forced him to take the plunge, and, as we have seen, in January, 1934, he signed a Pact of Understanding with Hitler. If the Germans were now to force the pace unduly over Danzig, they would run the risk of obliging Pilsudski's successors to reconsider the alignment of Polish foreign policy. The importance of such a contingency at the present time scarcely needs stressing.

THE AUSTRO-GERMAN AGREEMENT

ON 11th July an agreement was signed by Reichs Chancellor Adolf Hitler and the Austrian Chancellor, Dr. Kurt von Schuschnigg restoring "normal and friendly mutual relations" between their two countries.

By this agreement, each government undertakes not to interfere in the political conditions of the other country. Although Germany undertakes to recognize the full sovereignty of the Federal State of Austria, a significant clause in the summary of the agreement as broadcast by Dr. Goebbels runs: "The Austrian Federal State Government's general policy . . . shall be constantly guided by the principle that Austria recognizes herself to be a German State."

On the other hand, in a broadcast by the Viennese radio, Dr. von Schuschnigg said that the only political organization permitted in Austria was the Patriotic Front (the Government Party), and that the Austrian Nazi party was illegal and the wearing of Swastika badges was prohibited. Propaganda for union with Germany would be stopped at once in Austria.

The agreement has been acclaimed in Germany, Austria, and Italy as being a solution of the intense bitterness which has existed for some three years between the two former, and a relief of an ever-present anxiety to the latter. In effect, it would seem that Germany has suspended her efforts to absorb Austria by direct pressure from without, and has adopted a policy of peaceful penetration. How far and how fast this will take her towards her goal remains to be seen.

France is gravely suspicious of this new move, and sees in it the lining up of Germany, Italy, Austria, and Hungary to form a Central European "bloc," bent on "revisionism" (of the War treaties).

It is impossible to ignore the tendency, which this agreement emphasizes, of the principal European Powers to revert to their pre-War groups. Moreover, it is significant that the four nations which originally comprised the Triple Alliance should now all be governed by dictators whose internal politics have much in common. The need for mutual support of their regimes may prove an added incentive for closer co-operation in external affairs.

THE NEW DARDANELLES CONVENTION

A Conference was called, and met at Montreux on 22nd June, to consider Turkey's claim for the revision of the Straits Convention. Her main purpose was to secure freedom to remilitarize the shores of the Bosphorus, Dardanelles, and Sea of Marmora, which had been demilitarized under the Treaty of Lausanne in 1923, and certain restrictions on the passage of foreign warships.

All the Powers signatory to the existing Convention (part of the Treaty), except Italy, were represented. They included Bulgaria,

France, Greece, Japan, Rumania, Soviet Russia, Turkey, the United Kingdom, and Yugoslavia.

After some difficulty with Soviet Russia, a new Convention was signed on 20th July. It will remain in force for twenty years, but is open to amendment every five years.

The object of the new Convention is, it is stated, to regulate the transit and navigation of the Straits in such a way as to safeguard, within the limits of the security of Turkey and of the Black Sea Powers, the principles of the Peace Treaty. The following are the chief points :—

- (1) Commercial vessels remain free to use the Straits by day and night in peace, and also in war when Turkey is neutral, and also by day when Turkey is a belligerent, if the vessels fly a neutral flag.
- (2) Any external Power may send a force of "light surface vessels, small warships, and fleet auxiliaries," up to a maximum of nine vessels and 15,000 tons, through the Straits by day, on giving Turkey a week's notice.

This limits the size of foreign warships which may pass up the Straits to vessels of not more than 10,000 tons and carrying guns of not greater calibre than 8 in.

- (3) Battleships, including the German 11 in. "pocket" class, submarines, military aircraft, and apparently aircraft carriers, belonging to external Powers, are excluded from the Straits.
- (4) The total tonnage of warships belonging to non-Black Sea Powers, which may assemble in these waters is limited to 30,000 tons. If the Soviet Black Sea fleet should be increased by 10,000 tons over its existing strength, then the foreign tonnage will rise proportionately to a maximum of 45,000 tons.
- (5) No single Power may send in more than two-thirds of the 30,000 (or 45,000) tons, and the stay is limited to three weeks.
- (6) External Powers may, with Turkey's permission, also send in up to 8,000 tons "for humanitarian ends"—presumably for evacuating their nationals in time of emergency; but if the Black Sea is already "full up" or would then become so, the consent of the other Black Sea Powers within 48 hours will be necessary.
- (7) Black Sea Powers are practically free to use the Straits to pass their warships out into the Aegean and thence to the Mediterranean generally. Their capital ships are exempt from restrictions on re-entering the Straits, except that they

must pass through one at a time and be escorted by not more than two torpedo boats.

- (8) Naval forces from outside paying courtesy visits at Turkey's invitation are exempt from the tonnage restrictions.
- (9) In time of war, if Turkey is neutral, the Straits are closed completely to belligerent naval forces unless they are executing missions ordered by the League of Nations against an aggressor ; or, if the League has failed to act, they are going to succour a victim of aggression under a " mutual aid pact which has been concluded within the framework of the League Covenant. . . ."
- (10) If Turkey is a belligerent, she is at liberty to close the Straits. This she is also empowered to do if she feels she is " menaced by war " ; but, in the latter case, she must revoke the measures taken if the League Council by a two-thirds majority decides they are not justified, and if a majority of the signatories of the new convention share this view.
- (11) Civil aircraft may fly between the Mediterranean and the Black Sea over specified routes, clear of the prohibited zones, after giving notice.
- (12) The powers of the International Commission at Constantinople, which supervised the execution of the original Convention, are now transferred to the Turkish Government.

The way has been left clear for Italy to join the Convention later.

Turkish troops formally entered the demilitarized zone at midnight on the day the new Convention was signed.

General satisfaction has been expressed with the way in which Turkey has submitted her case for arbitration ; by so doing she certainly predisposed the Powers concerned in her favour.

CORRESPONDENCE

[Correspondence is invited on subjects which have been dealt with in the JOURNAL, or which are of general interest to the Services. Correspondents are requested to put their views as concisely as possible, but publication of letters will be dependent on the space available in each number of the JOURNAL.—EDITOR.]

AIRCRAFT ATTACKS ON WARSHIPS

TO THE EDITOR OF THE R.U.S.I. JOURNAL.

SIR,—Some of the figures of Lieutenant-Commander Young's most illuminating article in your May issue should be reproduced in poster form by the Home Office and displayed on hoardings throughout the country for the comfort of a worried public. That 94 per cent. of enemy bombers, flying level and straight at a height of 10,000 feet and within range of twelve high-angle guns, will inevitably be destroyed is a most comforting reflection. We have now a sure defence for our dockyards and arsenals. We may even be content with destroying 61 per cent. of the invaders each time they come over and defend our great cities with a gun or two per mile of perimeter.

After all, we are a peaceful nation, and only want to be left alone. We don't want to bomb anyone, so why spend our money on anything but guns for our defence? It will be very cheap and we can build many more ships.

Or is there some awful error in these calculations? I am no juggler with figures, but if, as I calculate, the author has multiplied by 9 the 50 per cent. peace time bombing zone to allow for war conditions, ought we not to discount in a similar way his A.A. assumptions? That would give us one hit for every 1,400 rounds fired. Using the author's deductions from his figures this would make the air casualties 7 per cent. instead of 61 per cent.; but are the deductions correct?

Surely the percentage of hits gives the likelihood of one machine getting through, that is to say that one single aeroplane gets through 39 times (or 93 times) out of 100 according to which figure you choose: it cannot mean that of a formation 61 per cent. (or 7 per cent.) are destroyed, unless one assumes that every machine which comes over is under this intensity of fire for the whole time of 90 seconds. It would be very easy to show that this is impossible.

Perhaps some mathematician will kindly work out for us how many of the "thousand machines" of the author's air attack will ever come under fire at all as they stream over in groups at varying heights and speeds! Or shall we give up these brain exercises in numbers and rely a little on what experience exists plus a little commonsense?

J. A. CHAMIER,
Air Commodore,

Secretary-General, Air League of the British
Empire.

19th June, 1936.

TO THE EDITOR OF THE R.U.S.I. JOURNAL.

SIR,—In the May, 1936, number of the JOURNAL appeared two very interesting articles.

The first was a report of a lecture by Major-General Sir Henry Thuillier on "Can Methods of Warfare be Restricted?" May I be allowed to disagree with his remarks upon the use of gas in war? It may well be that gas is a more humane weapon than high explosives in that it causes fewer deaths. In fact, General Thuillier's figures appear to prove this. But is it not generally agreed by the public of this country at any rate,—and after all the soldier is the servant of the public—that gas is a barbarous weapon? I think that the outcry from all sections of the people against the recent use of gas in Abyssinia shows beyond doubt what is the general feeling on this subject. It seems to me that this is one of the instances where instinct has the better of logic and I wonder whether the victors of Abyssinia will be the better off in the long run for having shortened their campaign at the expense of the good feeling of this country. I feel sure that General Thuillier would not advocate poisoning wells and water by a retreating army. In my humble opinion there is not much difference between this and the use of mustard gas against an enemy totally unprepared to resist it.

The second article was by Lieutenant-Commander M. H. C. Young, R.N., on "Aircraft Attacks or Gunfire against Warships." I suggest that this article was written "to promote discussion"! Certainly if his table of percentage of hits on ships and percentages of casualties to aircraft on page 338 is correct, the vicinity of a warship will be no place for an airman in the next war. But is it, in fact, correct? Do practices against "Queen Bee" aircraft, which are not very fast and which cannot be made to give an accurate imitation of diving bombing, bear them out?

My experience of A.A. fire was limited to six months in France in 1917-18. Admittedly the German "Archie" gunners had not the intricate (and therefore presumably more open to the human error) methods of rangefinding that now exist, but at least they had plenty of practice, and given five minutes' steady flight on the part of the aircraft, could find its height to within 6 feet. Nevertheless during that six months my squadron lost only one aircraft by a direct hit, and that was from the first salvo "Archie" fired on the day the Squadron first crossed the lines.

Lieutenant-Commander Young seems to confine the effect of aircraft attacks principally to attacks on battleships. What about cruisers and that most vulnerable ship, the aircraft carrier? Even one 500 lb. bomb on the deck of a carrier would make subsequent flying operations difficult. From the point of view of the defence of places like Singapore, where the bulk of the attacking force would probably not be battleships, it appears to me that aircraft will play a most important part.

R.A.F. Station, Abingdon,
25th May, 1936.

G. M. KNOCKER,
Squadron Leader.

TO THE EDITOR OF THE R.U.S.I. JOURNAL.

SIR,—I am obliged to you for giving me the opportunity of reading "Solver's" amusing article on "Aircraft Attacks against Warships," which replies to my article in the May Journal. I must not trespass on your space in an attempt to keep up the same level of wit, so I will "cut the cackle and come to the 'osses."

Apart from matters of detail, there is only one essential difference between us, and from this nearly all the other differences in point of view spring. The

essential difference is that my critic only allows 10 yards radius for the destructive effect of an A.A. burst, as against the 40 yards mentioned in my article. This, of course, is a difference not of argument but of fact—a fact which as the result of secret experiments, is no doubt known more accurately than I am able to state it. The general opinion in all three Services, however, favours my figure rather than that of my critic. An article in the R.U.S.I. JOURNAL for May, 1932, gives the effective distance as 30 yards, and it is reasonable to suppose that the technical performance of H.E. shell from larger calibre guns has improved since that time. Incidentally, this latter figure was given by a pilot in an article in which he was endeavouring to minimise as much as possible the effects of A.A. fire; one can therefore be confident that the figure was not too high.

The result of assuming the effective distance to be 10 yards instead of 40 yards would be to divide the percentage of casualties to aircraft by 64, since the percentage of casualties varies with the cube of the effective distance. My critic takes account of the "overs," which I had purposely left out. With this assumption, which incidentally is scientifically incorrect, my figure for the percentage of casualties to aircraft (61 per cent.) should be divided by 32 only, giving a figure of 1.9 per cent. On reference to "Solver's" tabulated figures, one finds 0.019 per cent.; clearly there is a little matter of two decimal places to be settled between us. I fear that he has fallen into the old error of thinking that 0.019 of a hit on one target is the same thing as 0.019 per cent casualties. For example, a bad revolver shot may fire a number of rounds (say 96) at a target, and his instructor may calculate that he has the expectation of 0.5 of a hit, i.e., that it is even money whether or not he hits the target once. If 100 targets are being fired at by 100 similarly bad marksmen, each firing 96 rounds, 50 targets should be hit, and the percentage of targets hit will be 50 per cent. This latter figure could be called the "percentage of casualties to targets," and could be used to deduce the number of targets hit from any given number fired at.

In short, "Solver's" premise of 10 yards is incorrect. I do not necessarily claim that 40 yards is accurate, I merely claim that the distance is of the order of 40 yards rather than of the order of 10 yards. In addition, he has omitted to multiply by 100. He therefore gets a ridiculously low figure for casualties to aircraft.

My critic refers to the allowance for loss of bombing accuracy in war conditions as the "wind-up factor." I had no intention of making any allowance for "wind-up"; the allowance is made on account of the disturbance of concentration of the aircraft crew, and the disturbed air conditions, during the period of aim. I quite agree that if the casualties are only 1.9 per cent there will not be enough bursts near the aircraft to necessitate an allowance as large as I made, but if the casualties are of the order of 61 per cent. the survivors will have had close bursts all round them, and their aim will have suffered to approximately the extent I indicated. In this connection it might be as well to explain why no allowance was made in my article for loss of accuracy of A.A. fire. The reason is that the A.A. personnel are not being fired at during the all-important period of the approach of the aircraft, since the bombs from the survivors do not fall until well after this period, during which alone I have considered the effect of A.A. fire.

An allowance for loss of bombing accuracy is, however, a debatable point which can be avoided altogether by producing an A.A. shell which has an effective striking radius of 50 yards—not very much greater than that now available. In this case it can be easily calculated that, with no increase in the present accuracy of A.A. fire, 100 per cent. of the bombers will become casualties before the end of

their approach, and the question of the accuracy of their bombing will therefore not arise.

Now for the matters of detail. The improvement in bombing results which has occurred at the same time as the increase of speed in bombing aircraft is due, not to that increase in speed, but to the improved standards of training of aircraft crews and to years of insistence on the necessity of accuracy in wind measurement. This can be verified by reference to results obtained by *the same crews in the same season* in aircraft of different speeds; it will then be found that accuracy varies inversely as the speed. With regard to the effect of height on bombing accuracy, my critic's figures show that he has revived a nice old formula which stated that "the radius of the 50 per cent zone varies as the square root of the height." This used to be a convenient mathematical abstraction in the days when methods were primitive and few results were available on which to base anything better, but as far as bombing results over the sea are concerned it does not now stand.

In conclusion, I would like to emphasize that the factors affecting the success or otherwise of aircraft attacks over the land have very little connection with those influencing the results of attacks at sea; the only experience which is really important in this latter connection is that obtained in practices against sea targets—the further from land the better.

MALCOLM H. C. YOUNG,
Lieutenant-Commander, R.N.

21st July, 1936.

TO THE EDITOR OF THE R.U.S.I. JOURNAL.

SIR,—In the controversy on "Aircraft versus Warships," which has been raging somewhat acutely of late years, a fundamental fact which is liable to be overlooked is that the warship has the advantage that the high explosive shells with which she can engage aircraft have a very much less "time of flight" than the aircraft—although the latter have to arrive at an exact spot before their bombs can be of any effect.

When aircraft can fly as fast as projectiles, and fire their bombs from as great a distance from warships as the guns of the latter can fire at them; when bombs can penetrate armour like armour-piercing shell; when salvos of bombs can be sustained like salvos of gunfire, then indeed the day of the surface warship will be nearing its end. But that is not yet.

OBSERVER.

23rd July, 1936.

THE TEN THOUSAND TON BATTLESHIP

TO THE EDITOR OF THE R.U.S.I. JOURNAL.

SIR,—Captain A. C. Dewar is reported in the JOURNAL for May, 1936 (page 278), to have made a remark in debate which, coming from a historian and a student of war, appears to me singular both for its inaccuracy of fact and for the irrelevance and the apparent deductions drawn therefrom. He said, "I dare say the 10,000 ton battleship would be quite a good ship, but the "Good Hope" was a 10,000 ton ship, and she was sunk."

Even if the "Good Hope" had been a 10,000 ton ship, which she was not, being of 14,100 tons; and if she had been a battleship, which she was not, being an armoured cruiser, I fail entirely to see what bearing her loss in battle has upon the question of whether a battleship size can be reduced to 10,000 tons.

The "Good Hope" was an armoured 14,100 ton cruiser, launched in 1901; her opponent was an 11,400 ton armoured cruiser, launched in 1906—five years "younger." The broadsides of the British and German ships were respectively 1,560 and 1,532 tons; what their muzzle energies—the important comparison, were, I do not know. The German ships were the better armoured. But what was crucial in this engagement was neither the size of the ships nor the power of their guns, but the fact that the German ships had been long in commission and were two of the best shooting ships in the German navy, with the added advantage of the light; the British were newly commissioned with reserve crews, who had had no opportunity whatever of target practice. Hence the result that the Germans hit the British, and the British did not hit the Germans.¹

Thus, I would say, that the fact that a 14,100 ton newly commissioned cruiser was sunk by an 11,400 ton cruiser with well practised gunners has no bearing at all on the question of the possible limitations of size of what is called a "battleship." Were not the "Lutzow" of some 28,000 tons sunk at Jutland, the "Audacious" by a mine, the "Viribus Unitis" by a torpedo; and had not the "Warspite" to withdraw from the line? And did not the Japanese battleships of 15,000 tons and less, and the armoured cruiser which also fought in the line at Tsushima survive? If so, what bearing has size upon the "unsinkability" of ships which seem to be the aim of modern policy, provided the same limitation applies to both sides?

H. W. RICHMOND,
Admiral.

A MOTOR-CYCLE RESERVE (T.A.)

TO THE EDITOR OF THE R.U.S.I. JOURNAL.

SIR,—One of the pillars of the new German mechanized army is, it is understood, the motor cycle and side-car combination with its crew of three men—two on the cycle and one in the side-car. This sub-unit possesses great mobility, and as the men can push the combination over rough, hilly or swampy ground, it can go almost anywhere. A light automatic weapon with ample ammunition can be carried in the side-car or the men can carry rifles. The combination is small and inconspicuous, takes up little road space and offers a difficult target while on the move. At the halt it is easily concealed from ground and air observers. Cheapness of manufacture and economy in operation are important points in its favour.

No such units, with the possible exception of Royal Signals, exist in our Territorial Army. Signals, moreover, require only comparatively few men as despatch riders.

We have approached the War Office with a proposal for the creation of a motor-cycle reserve, but have been informed that they have all the motor-cycle reserve they require. It would appear that they are counting on the natural patriotism

¹ As a matter of history it is also important to note that the six 8.2 in. guns, which the "Scharnhorst" and "Gneisenau" could each bring to bear, outranged any of the guns of the "Good Hope" and "Monmouth." The only guns of greater calibre than 6 in. in the British squadron were two 9.2 in. in the "Good Hope." Owing to the heavy sea, the main-deck guns of the "Good Hope" and "Monmouth" could not be fought.

If any consideration had been given to these weapon deficiencies, it is inconceivable that our ships should have been placed in a situation where their destruction was inevitable.—EDITOR.

of the average willing Briton to respond to a call for man power in an emergency. Yet, surely, the importance of the *training* necessary before such men can be of any real value must not be overlooked. It will be recalled that in the first six months of the Great War millions of men enlisted voluntarily; our training was in the hands of temporary officers and N.C.O.s, some of whom had been retired ten or fifteen years and had passed their best, both physically and mentally. The result was that whole armies of the new men were rushed to France badly trained.

In view of the mechanization of armed forces since the War, intensive training and thoroughness will be of paramount importance. Knowing motor cyclists as we do, we believe that with reasonable encouragement they would become a very powerful and competent force and, in the early months of hostilities they might exercise a very great influence on the course of the fighting. As the Territorial Army is entirely dependent on voluntary enlistment, it is of vital importance that the wishes and inclinations of potential sources of man-power should be carefully studied. Infantry units make no appeal to the motor-cycling community; but they would gladly join special motor-cycle units if such existed. The Government cannot fail to be aware of the preparations being made by foreign Powers and of their encouragement of motor cyclists solely for use in times of emergency. Surely it is not too much to ask that combatant motor-cycle units should be created within the framework of the Territorial Army?

SANDHURST,
Chairman.

S. A. DAVIS,
Organizing Secretary.
British Motor Cycle Association.

May, 1936.

HAIG—SECOND VOLUME

TO THE EDITOR OF THE R.U.S.I. JOURNAL.

SIR,—I have read your review of the second volume of Duff Cooper's *Haig* with some perplexity. I was impressed by the acuteness of some of its criticisms of this book's disregard of available evidence, and thus the more astonished at certain of the statements which the reviewer himself made.

In reference to the inadequate quotation from the message which Pétain sent to Haig early in June, 1917, concerning the troubles in the French Army, the reviewer rightly remarks that Pétain is "still alive and ought to have been asked for information" by the biographer, in order to clear up the point. Yet, a little further on, the reviewer himself, referring to Passchendaele, makes the statement that "it was fought where and when it was, at the demands of Admiral Jellicoe and General Pétain." Surely the reviewer ought not to have made such an unqualified assertion without asking Marshal Pétain for information. Had he done so, he would have discovered his mistake. Mr. Duff Cooper himself is more careful than this, for he says quite definitely that "Haig's mind had been occupied with the conception of a campaign in the North" long before either Jellicoe or Pétain came into the discussions; and that he had drawn up his plans for the Ypres offensive, besides moving the troops thither, before Pétain had even taken over command of the French Army.

The reviewer also declares that it is "the fourth phase, from the 5th October onwards" to which alone adverse criticism has been directed. Yet, the *Australian Official History*, to which he refers in the same paragraph, has this verdict:

"The fighting in August overtaxed and discouraged the British troops to an extent which their stubborn Commander-in-Chief did not realize, but which was obvious to everyone in touch with the true feeling on that battlefield. War correspondents like Philip Gibbs were sensitive to the truth. The German troops saw it clearly, as the British infantry staggered through the mud to attack them, and it was from the statements of German prisoners that some notion of the facts, which gave cause for anxiety, came to the ears of General Gough. The truth was that these strokes, aimed at the morale of the German Army, were wearing down the morale of the British. Whether British commanders were aware of the facts or not, it was the August fighting that gave to the Third Battle of Ypres its baneful reputation. The fighting at Passchendaele two months later merely added to this.

"Crown Prince Rupprecht, who had often been impressed by the staunch bearing of British prisoners, was shocked on August 16th by one of them saying that they would gladly have shot down the officers who ordered them to attack. On the 22nd he notes that captured soldiers again blamed the officers and the officers the staff. On the 25th he was informed by his infantry that, whereas the British would formerly hold out though outflanked, they now surrendered easily."

Historical investigation is a slow process: it will become slower still if evidence that has been established can be so easily overlooked or obscured. Once a point has become clear it ought to be kept clear. This is essential if we are ever to free history from the smoke of controversy, and enable it to become a field for scientific research into the lessons.

B. H. LIDDELL HART.

25th May, 1936.

TO THE EDITOR OF THE R.U.S.I. JOURNAL.

SIR,—Captain Liddell Hart's wild review of *Haig—Second Volume* in *The Times* seems to disqualify him from sitting in judgment on another reviewer of the same book. Besides, it is most unusual for one reviewer, usurping the privileges of the author, to demand "reasons in writing" from another. Captain Liddell Hart must be acquainted with *The Times's* practice in this matter.

His troubles can be quickly dispersed. As regards the first point, let him produce the information from Maréchal Pétain which he hints he possesses.

As regards the second point, I have the highest respect for Dr. Bean as an historian. But his opinion in this particular case seems to be discounted by the fact that he lumps "the British troops" together and makes no distinction between those of the Second and Fifth Army. Soldiers who were there will appreciate this point. Further, the I. Anzac Corps (Dr. Bean with it) had been resting for four months, only came up to Ypres on the 12th September (*Australian Official History*, Vol. iv., p. 745), and to its well rested members the British, after six weeks fighting, may have looked a bit "overtaxed and discouraged." But they were not as the successes of the 20th September—4th October showed.

I think Captain Liddell Hart might read with advantage the masterly account of Passchendaele—which I did not write—in the R.U.S.I. JOURNAL for May, 1935.

23rd June, 1936.

YOUR REVIEWER.

MEMOIRS OF AN UNCONVENTIONAL SOLDIER

TO THE EDITOR OF THE JOURNAL OF THE R.U.S.I.

SIR,—In the May, 1936, number of the JOURNAL there appeared a review of my book *Memoirs of an Unconventional Soldier*, in which your reviewer states: "... he frequently appealed direct to Mr. Winston Churchill, to Sir Henry Wilson and to Lord Northcliffe, to get his ideas imposed upon his superiors." As regards the first two gentlemen I have no objection to raise, because the Tank Corps came under the Ministry of Munitions as much as it did under G.H.Q. and Sir Henry Wilson was my ultimate chief. But to couple with their names that of Lord Northcliffe, is in my opinion, a libel on myself as it imputes to me the grossest disloyalty as a soldier. The sole occasion upon which I met Lord Northcliffe is described on p. 226. There I state that I excused myself from answering his questions. I must therefore request you to publish this letter in the next number of the JOURNAL with a justification of your reviewer's statement or its unconditional withdrawal.

J. F. C. FULLER,
Major-General.

19th June, 1936.

The Reviewer of General Fuller's Book writes as follows:—

"I much regret that an error was made in including Lord Northcliffe's name in the sentence referred to, for which there is no justification in the book. I should like to withdraw it completely and apologize to General Fuller for the mistake."

FLYING BOAT FALLACIES

TO THE EDITOR OF THE R.U.S.I. JOURNAL.

SIR,—The writer of the article on "Flying Boat Fallacies" in last quarter's JOURNAL has, perhaps naturally, approached the subject with a very distinct bias against the boat, as compared with the aeroplane. Unfortunately this bias has caused him to magnify the disadvantages of the flying boat, while any virtues which he allows it are dismissed as negligible. This makes the paper of little value to the practical student. It will be convenient to take the various points in roughly the same order as the author.

The fact that a flying boat is capable of alighting on water is not merely an illusory safeguard, as the author suggests; the modern flying boat is capable of riding out quite considerable seas and, if forced to alight, the chances that the passengers and crew will be saved are favourable. The fact that this is the case undoubtedly adds greatly to the feeling of security of the passengers and, it is not too much to say, it is inconceivable that a prospective passenger, given the choice of making a three or four hundred miles sea crossing in a flying boat or an aeroplane, would choose the latter craft.

The hull of a flying boat not only "conveys an impression of strength," it is strong, owing to the great strength/weight ratio of the materials of which it is constructed. The wing floats may look weak but, in reality, this is not the case. They will stand very heavy buffeting without showing signs of failure. It is begging the question to say that forced landings should not occur; it is true that engine failure, either caused by breakages in the engine itself or by extraneous causes, is unusual at the present time, but these failures *do* occur and the results must be allowed for and the greatest measure of safety possible provided.

The author admits that the flying boat is capable of taking off with heavier loads than a comparable aeroplane, and then proceeds to try and prove that this is only a temporary advantage. The flying boat *has* an almost unlimited natural aerodrome.

It *can* take off under the conditions which the author seems to think make its use impracticable. Even in a dead flat calm, (or rather from a "glassy sea," which I imagine the author means), modern boats with variable pitch airscrews and wing flaps can take off without any trouble. Of course a flat calm, in itself, presents no difficulty at all. The author seems to forget that eight years ago a squadron of flying boats, which would now be looked upon as quite obsolete, flew from England to Australia, all round Australia and back to Singapore, without casualties to boats or crews. Part of this flight was carried out in unfavourable weather and on some occasions boats alighted on the open sea for engine adjustments and minor repairs.

The statement that sea conditions at either end of the stages of, presumably, a regular air route may prevent taking off or alighting hardly needs confuting. The ends of the stages on such a route will naturally be situated in sheltered waters,

In direct contradiction of the author's statements, I can confidently assert that there is no undue difficulty in maintaining either the body or engines of a flying boat. It would seem that this idea must have been evolved from his own inner consciousness; no one with practical knowledge of the subject would endorse it. As for overhauls, this sort of work is always done at bases, by properly organized air lines, whether aeroplanes or flying boats are used in their operations. The corrosive action of sea water is not a serious matter for a hull built of modern materials, suitably treated. It is obviously convenient to haul the boat out of the water when cleaning the hull of barnacles, etc., but no very elaborate apparatus is necessary for doing this.

Flying boats are no more intricate in design than aeroplanes. Naturally, the shape of the hull is important, but to say that there are innumerable unsolved problems connected with this subject is as true, or as untrue, as to say that there are innumerable unsolved problems in every branch of engineering. The latest flying boats are in no way inferior to comparable aeroplanes. The price of a flying boat is, undoubtedly, higher than that of an aeroplane, but the disparity is nothing like as much as the author suggests.

It is quite erroneous to say that a programme of scheduled services cannot be guaranteed with flying boats to exactly the same degree as it could be with aeroplanes. Imperial Airways have been running regular services with flying boats for years past.

Technical development will aid the flying boat as much as the aeroplane. One advantage, which has not been alluded to by the author, the flying boat will always have, as far as can be foreseen at present: there is a very distinct limit to the size of a practical aeroplane; the limiting size of a flying boat is very much greater.

Until the time comes when the world is not divided into separate nations, there is another, and very important, advantage that the boat has from the point of view of our own country. It is the only class of aircraft which can keep up communication between the different parts of the Empire without having to fly over the dominions of other countries. This is, perhaps, the most far reaching advantage of all and, in itself, would justify the not very excessive sum which Great Britain has spent on this branch of aircraft development.

Both aeroplanes and flying boats have their uses. Their development should go on side by side. But, as far as commercial work from this country is concerned, there can be little doubt that the more important type is the flying boat and not the aeroplane.

J. F. A. HIGGINS,
Air Marshall.

NAVY NOTES

GREAT BRITAIN

HIS MAJESTY THE KING

His Majesty paid his first visit to the Navy since his accession on 30th June, when he proceeded to Portsmouth and inspected the Gunnery and Torpedo Schools and various other establishments. By His Majesty's wish, there was as little formality as possible on this occasion.

NEW FIRST LORD OF THE ADMIRALTY.

It was announced on 5th June that the King had approved the appointment of the Right Hon. Sir Samuel Hoare, Bt., G.C.S.I., G.B.E., C.M.G., M.P., as First Lord of the Admiralty in the place of the Right Hon. Viscount Monsell, G.B.E., resigned.

Lord Monsell served on the active list of the Royal Navy from 1895 to 1906, and specialized in torpedoes. He entered Parliament in 1910, but returned to naval service during the War. Resuming his political career after the Armistice, he became Civil Lord of the Admiralty from April, 1921, to November, 1922, and Parliamentary and Financial Secretary from November, 1922, to January, 1924. He was appointed First Lord in succession to Sir Austen Chamberlain in November, 1931.

Sir Samuel Hoare brings to the Admiralty experience as Secretary of State for Air from 1922 to 1929 (except for the period of the Labour administration in 1924). He was Secretary of State for India in 1931-35, and afterwards for a short time Secretary of State for Foreign Affairs.

The new First Lord, accompanied by Rear-Admiral G. C. C. Royle, Naval Secretary, Captain C. F. Harris, R.N., Director of Naval Air Division, and Mr. W. W. Astor, M.P., Parliamentary Private Secretary, left Hendon by air on 13th July to visit H.M.S. "Courageous," cruising off the Isle of Wight. The First Lord was saluted with 17 guns on landing on board the "Courageous." He returned to Hendon by air later the same day.

FLAG PROMOTIONS AND RETIREMENTS.

In accordance with His Majesty's wishes, Admiral Sir John D. Kelly, G.C.B., G.C.V.O., First and Principal Naval Aide-de-Camp to the King, was selected for special promotion to Admiral of the Fleet, in recognition of his distinguished services. The promotion dated from 12th July, the day before Sir John was due to retire on reaching the age limit of 65 years, and is additional to the authorized numbers. Sir John hauled down his flag as Commander-in-Chief, Portsmouth, on 13th July.

The last special promotion to Admiral of the Fleet was that of the late Marquess of Milford Haven (Prince Louis of Battenberg) on 4th August, 1921, on the retired list. The last on the active list was that of the late Lord Wester Wemyss, on 1st November, 1919, who relinquished on that date the post of First Sea Lord.

The date of the appointment of Admiral the Earl of Cork and Orrery, G.C.B., G.C.V.O., as First and Principal Naval Aide-de-Camp to the King, in succession to Admiral Sir John Kelly, was amended to 12th July, 1936.

In consequence of the special promotion of Admiral Sir John Kelly, the following promotions and retirements were approved :—

Vice-Admiral Sir Edward R. G. R. Evans, K.C.B., D.S.O., to Admiral and re-appointed as Commander-in-Chief, The Nore.

Rear-Admiral Noel F. Laurence, C.B., D.S.O., to Vice-Admiral, and reappointed as Vice-Admiral, Aircraft Carriers.

Captains H. G. C. Franklin, A.D.C., M. J. R. Maxwell-Scott, D.S.O., A.D.C. ; Patrick Macnamara, A.D.C. ; L. F. Potter, A.D.C. ; J. H. Young, A.D.C. ; M. G. B. Legge, D.S.O., A.D.C. ; J. H. K. Clegg, O.B.E., were promoted to Rear-Admiral and placed on the retired list.

Captain (Commodore Second Class) the Hon. E. R. Drummond, M.V.O., A.D.C., R.N., to Rear-Admiral, and to be borne supernumerary to the list of Flag Officers while holding his present appointment under the New Zealand Government.

Captain (Commodore Second Class) C. G. Sedgwick, R.N., to Rear-Admiral, and placed on the retired list.

Captain W. J. Whitworth, D.S.O., R.N., to Rear-Admiral.

On 19th June, Admiral Sir W. A. Howard Kelly, G.B.E., K.C.B., C.M.G., M.V.O., was placed on the retired list. In consequence, Vice-Admiral the Hon. Sir Matthew R. Best, K.C.B., D.S.O., M.V.O., was promoted to Admiral ; Rear-Admiral Dudley B. N. North, C.B., C.S.I., C.M.G., C.V.O., A.D.C., to Vice-Admiral ; and Captain Henry C. Rawlings, D.S.O., A.D.C., R.N., to Rear-Admiral.

Rear-Admiral H. C. Rawlings was placed on the retired list. Captain Kenneth D. W. Macpherson, A.D.C., was promoted to Rear-Admiral and placed on the retired list. Captain Edward B. Cloete, A.D.C., was promoted to Rear-Admiral and placed on the retired list. Captain Reginald V. Holt, D.S.O., M.V.O., A.D.C., R.N., was promoted to Rear-Admiral.

Admiral Sir Matthew Best was reappointed as Commander-in-Chief, America and West Indies Station ; and Vice-Admiral Dudley North was reappointed in command of His Majesty's Yachts, on promotion.

Admiral the Hon. Sir Herbert Meade-Fetherstonhaugh, G.C.V.O., C.B., D.S.O., was placed on the retired list at his own request (22nd July). In consequence, Vice-Admiral Sir George K. Chetwode, K.C.B., C.B.E., was promoted to Admiral ; Rear-Admiral Andrew B. Cunningham, C.B., D.S.O., to Vice-Admiral ; and Captain Frank Elliott, O.B.E., R.N., to Rear-Admiral (22nd July). Rear-Admiral Elliott was placed on the retired list from 23rd July, and Captain Bertram C. Watson, D.S.O., R.N., was promoted to Rear-Admiral.

FLAG APPOINTMENTS.

EAST INDIES STATION.—On account of ill-health, Vice-Admiral F. F. Rose, C.B., D.S.O., relinquished his post as Commander-in-Chief, East Indies, and left Aden for home on 20th May. On his departure the Admiralty directed Captain J. G. Grace to hoist his broad pendant as Commodore 1st class in the cruiser "Emerald," to assume temporary command. The appointment of Senior Naval Officer, Persian Gulf, was also ordered to be regarded as an independent command until a successor to Vice-Admiral Rose arrived.

The King approved the appointment of Vice-Admiral Sir Alexander Ramsay, K.C.V.O., C.B., D.S.O., as Commander-in-Chief, and Sir Alexander left England on 29th May.

BATTLE CRUISER SQUADRON.—Vice-Admiral Geoffrey Blake, C.B., D.S.O., is appointed to be Vice-Admiral Commanding Battle Cruiser Squadron in succession to Vice-Admiral Sidney R. Bailey, C.B., C.B.E., D.S.O., and is to assume command in August, when he will relieve Vice-Admiral Sir Charles Forbes, K.C.B., D.S.O., as Second-in-Command, Mediterranean. The decision to transfer the Battle Cruiser Squadron from the Home to the Mediterranean Fleet was announced by the First Lord in March, 1935.

FIRST BATTLE SQUADRON.—Rear-Admiral T. H. Binney, C.B., D.S.O., is appointed Rear-Admiral, First Battle Squadron, to date July, 1936, and to assume duty in August, 1936.

SECOND CRUISER SQUADRON.—Rear-Admiral T. F. P. Calvert, C.B., C.V.O., D.S.O., is to be Rear-Admiral Commanding Second Cruiser Squadron, in succession to Vice-Admiral S. J. Meyrick, C.B., to date 14th December, 1936.

REAR-ADMIRAL (Submarines).—Rear-Admiral R. H. T. Raikes, C.V.O., D.S.O., is to be Rear-Admiral (Submarines), in succession to Vice-Admiral C. P. Talbot, C.B., D.S.O., to date 10th December, 1936.

NAVAL EQUIPMENT DEPARTMENT.—Rear-Admiral F. T. B. Tower, O.B.E., is to be Director of Naval Equipment, in succession to Rear-Admiral St. Aubyn B. Wake, C.B., to date 10th December, 1936.

DEATH OF SIR OSWYN MURRAY.

Sir Oswyn Murray, G.C.B., Permanent Secretary of the Admiralty since 1917, died on 10th July at Roehampton at the age of 62, not long before the date fixed for his retirement, which he had postponed from 1934 at the request of the First Lord.

Sir Oswyn entered the Admiralty in 1897, and was assistant private secretary to Lords Goschen and Selborne when First Lord, and later private secretary to Mr. Arnold Forster and Mr. Pretymann when Parliamentary Secretary. In 1904 he became Assistant Director, and in 1905, Director, of the Victualling Department. He became Assistant Secretary of the Admiralty in 1911.

SECRETARY OF THE ADMIRALTY.

Sir R. H. Archibald Carter, K.C.I.E., C.B., has been appointed Permanent Secretary of the Admiralty, with effect from 23rd July, 1936, in succession to the late Sir Oswyn Murray. He has been Assistant Secretary, India Office, since 1932.

DIRECTOR OF NAVAL CONSTRUCTION.

It was announced by the Admiralty on 24th July that Sir Arthur W. Johns, K.C.B., C.B.E., having tendered his resignation owing to ill-health, Mr. S. V. Goodall, O.B.E., has been appointed to succeed him as Director of Naval Construction, to date 25th July, 1936.

SUPPLEMENTARY ESTIMATE.

A second Supplementary Estimate for £1,059,000 was published on 9th July, which with the first Supplementary Estimate for £10,300,000 issued at the end of April, brings the total estimated expenditure on the Navy for 1936 to £81,289,000.

The estimated expenditure for 1935 was £64,900,000, which included a Supplementary Estimate of £4,850,000 issued on 17th February, chiefly on account of expenditure incurred in connection with the Italo-Abyssinian crisis.

The following ships were added to the 1936 programme :—

- 2 Cruisers (about 5,000 tons) ; making 7 cruisers in all.
- 1 Leader and 8 destroyers ; making 18 vessels in all.
- 1 Aircraft carrier ; making 2 in all.
- 4 Submarines (3 patrol type and 1 of a smaller type) ; making 8 submarines in all.

The total cost of these additions is estimated at £11,015,000, and the expenditure in the current year £150,000.

It has been found possible to accelerate certain ships of the existing programme and to make earlier provision for certain material at an estimated additional cost of £759,000. Provision is also made under two new subheads for £150,000 for extensions of plant and works for the manufacture of armour, guns, etc., at contractors' works.

MATERIAL.

1936 PROGRAMME.—The amounts for the two battleships to be laid down in January next were increased by the Supplementary Estimate of 9th July from £202,900 to £403,360. On 29th July, the First Lord announced that orders for the two battleships had been placed with Vickers-Armstrongs at Walker-on-Tyne and Cammell Laird and Co. at Birkenhead.

Contracts for the first nine " Tribal " class destroyers, 1936 programme, were placed in May as follows :—Two vessels each—Swan Hunter and Wigham Richardson, Ltd., Wallsend-on-Tyne (with machinery by the Wallsend Slipway and Engineering Company) ; W. Denny and Brothers, Ltd., Dumbarton ; Parsons Marine Steam Turbine Company, Ltd., Wallsend-on-Tyne (hulls by Vickers-Armstrongs, Ltd., Walker-on-Tyne) ; Scotts' Shipbuilding and Engineering Company, Ltd., Greenock. One vessel—A. Stephen and Sons, Ltd., Govan, Glasgow.

1935 PROGRAMME.—The amounts voted for the cruisers " Liverpool " and " Manchester " are increased by the Supplementary Estimate from about £525,000 to £614,000. These ships were laid down by the Fairfield Company and Messrs. Hawthorn, Leslie and Company respectively on 17th February and 28th March, 1936.

The flotilla leader " Inglefield " was laid down on 29th April, and all the destroyers of the " Intrepid " class had been laid down by that date.

The submarine " Cachalot " was laid down by the Scotts' Company, Greenock, on 12th May.

The first of the six motor torpedo-boats of this programme was inspected by King Edward during his visit to Portsmouth on 30th June.

1934 PROGRAMME.—The cruiser " Glasgow " was launched at the Greenock shipyard of the Scotts' Company on 20th June. The " Sheffield " was launched at the Walker-on-Tyne shipyard of Vickers-Armstrongs, Ltd., on 23rd July. The " Birmingham " will be launched at Devonport Dockyard on 1st September. The " Aurora " will be launched at Portsmouth Dockyard on 20th August.

H.M.S. " Havock," launched by Messrs. Denny and Brothers, Ltd., Dumbarton, on 7th July, was the last of the eight destroyers of the " Hero " class, 1934 programme, to be put afloat.

The minelaying submarine "Rorqual" was launched at the Barrow works of Vickers-Armstrongs, Ltd., on 21st July. The submarine "Spearfish" was launched at the Birkenhead works of Cammell Laird and Co., Ltd., on 21st April.

All seven sloops of this programme have now been launched, as follows:—"Aberdeen," 22nd January, 1936, and "Fleetwood," 24th March, both at Devonport Dockyard; "Niger," 29th January, and "Salamander," 24th March, both by Messrs. J. S. White and Co., Cowes; "Mallard," 26th March, and "Puffin," 5th May, by Messrs. A. Stephen and Sons, Ltd., Govan; and "Stork," for surveying duties, 21st April, by Messrs. Denny and Bros., Dumbarton.

1933 PROGRAMME.—Only the destroyers and sloops of this programme are all completed.

1932 PROGRAMME.—The cruiser "Apollo" is now serving as flagship, America and West Indies, thus completing all the vessels of this programme.

1931 PROGRAMME.—After being delayed for many months with gearing machinery troubles, the "Amphion" completed to full crew on 7th July at Portsmouth for service as flagship, Africa Station, and left England later in the month.

THE MEDITERRANEAN SITUATION.

In anticipation of the raising of "Sanctions" on 15th July, the First Lord announced in the House of Commons, on 9th July, that the units temporarily sent to the Mediterranean from the Home station and from other stations abroad, would be released at an early date. But there was no intention of withdrawing the Fleet from the Mediterranean.

On 13th July, the Board of Admiralty sent the following message to H.M. ships at home and abroad:—"Their Lordships wish to express their high appreciation of the services rendered by officers and men of H.M. ships which have been stationed in Mediterranean and Red Sea waters for the past ten months, a duty which has been arduous and has involved much hardship." At the same time the Board expressed their appreciation to the Australian and New Zealand Navy Boards of the services rendered by their respective ships, which "brought a valuable access of strength to the naval forces in those waters."

On 14th July, the "Norfolk," East Indies flagship, left Aden for a cruise to Mombasa; and the "Ajax," South American Division, left to rejoin her station.

The Australian cruisers "Australia" and "Sydney" left Alexandria on 14th July for Fremantle.

Between 17th and 20th July, 36 vessels of the Home Fleet, including the battle-ships "Nelson" and "Rodney," returned to their Home Ports from the Mediterranean.

King Farouk witnessed from the "Queen Elizabeth" the last large-scale exercises to be held by the Fleet during its stay in Egyptian waters. After the exercises, the only ships which remained at Alexandria were the "Valiant," "Repulse," "Glorious" and a few auxiliaries.

BASE DEFENCES, MEDITERRANEAN.—With reference to the statement in the JOURNAL for February last alluding to the personnel shown in the Navy List under "President IV," it is understood that the Flag Officer shown therein commanded the naval base at Alexandria as a whole. The actual defences have been under the command of Brigadier W. L. H. Tripp, C.B., D.S.O., M.C., A.D.C., R.M.

PERSONNEL.

THE ROYAL CYPHER.—In conjunction with the adoption of the Royal Cypher for the new Reign, officers who have held the post of First and Principal Naval A.D.C. to King George V may continue to wear the "G.R." cypher, thus indicating their former appointment. An officer who has held this post both under King George and his present Majesty shall, on relinquishing this appointment, be permitted to wear the two cyphers, "G.R." and "E.R."

ENTRY OF CADETS.—In a letter to the Press on 30th May, Lord Monsell, the late First Lord, expressed the view that there could be no more favourable time for entry into the Royal Navy than the present, just at the beginning of the expansion arising out of the Government's defence programme. The surplus of officers which has hitherto existed has now been completely wiped off, and every boy who enters now has the prospect of a full normal career in the Service before him. The number of vacancies for Cadets at Dartmouth has been increased from 40 to 45 a term, and is likely to remain at the latter figure for years to come. The number of vacancies for Cadets entering the Service by the special entry examination is also being increased. For the next four years the Admiralty are prepared to take 100 Cadets a year for the executive branch, 36 for the engineering branch, 32 for the accountant branch, and 40 for the Royal Marines.

DIRECTOR OF EDUCATION DEPARTMENT.—On the retirement of the present Adviser on Education on 17th October, the title of the Head of the Education Department will be changed to Director of Education Department (abbreviated title—D. E. D.). The post will in future be filled by the appointment of an Instructor Captain, R.N., and will normally be held for a period not exceeding three to four years. Instructor Captain A. E. Hall, C.B.E., A.R.C.S., has been appointed Director of Education Department with effect from 18th October, 1936.

LIFE ASSURANCE.—Details of a new scheme to encourage officers to make effective provision for family responsibilities by means of life assurance were made known in Fleet Orders dated 28th May. Their Lordships have arranged with a panel of three leading Life Offices to grant special facilities in the way of deductions of premiums from pay, and medical examination (where required) by a naval medical officer.

TESTIMONIAL AWARDS.—The Beaufort and Wharton Testimonials for the year 1935 have been awarded to Lieutenant J. A. Harper, R.N., H.M.S. "Dryad."

The Shadwell Prize for 1935 has been awarded to Lieutenant A. R. Kennedy, R.N., H.M.S. "Folkestone," for his valuable survey of Land Harbour, Yasawa Group, Fiji Islands, while serving in H.M.S. "Laburnum."

GILBERT BLANE MEDALS.—In accordance with the revised rules for their award, Gilbert Blane Medals have been awarded to Surgeon Captain D. H. C. Given, R.N., retired, and Surgeon Commander M. B. Macleod, R.N. A further medal is available for allocation to the officer who achieves the best result at the promotion examination for Surgeon Commander, 1936, provided such result is considered to merit the award.

ENTRY OF BOYS FOR SPECIAL SERVICE.—It was announced in Fleet Orders dated 25th June that the special service system of entry was to be extended to boys between 16½ and 17½ years of age. They will be entered as boy, 2nd class (Special Service), and will be required to serve for twelve years from the date of entry. Of this period, seven years from the age of 18, in addition to whatever period may be necessary to attain that age, will be served in the Royal Navy, and the residue in

the Royal Fleet Reserve. The rates of pay for boys will be the same as for continuous service boys. For the time being they will be sent to Chatham for training.

DOCKYARD TRAINING FOR ARTIFICERS.—An Order in Council published in the *London Gazette* on 17th July stated that in view of the need for additional artificers in H.M. Navy, the Admiralty consider that the normal provision for training should be supplemented by the training of naval artificer apprentices in H.M. Dockyards under the general conditions applicable to dockyard apprentices. The Order in Council authorizes the Admiralty to extend to the naval artificer apprentice when under training in the Royal Dockyards the scale of remuneration payable to the dockyard apprentice.

ORGANIZATION AND DISTRIBUTION.

BOYS' TRAINING SQUADRON.—The battleships "Royal Sovereign" and "Ramillies" are now serving as training ships for boys, and the former has hoisted the flag of Rear-Admiral C. G. Ramsey, C.B., Rear-Admiral, Second Battle Squadron, which was formerly flown in the "Rodney."

The "Iron Duke" also commissioned on 21st May for service as gunnery firing ship and boys' training ship. She is administered by the Commander-in-Chief, Portsmouth, but the Rear-Admiral, Second Battle Squadron, is responsible for co-ordinating her work as training ship with that of the "Royal Sovereign" and "Ramillies." The "Royal Sovereign" made a cruise to Norwegian ports during June, and the "Ramillies" to Lamlash and Bangor, Co. Down.

MEDITERRANEAN FLEET.—The "Queen Elizabeth" left Devonport on 19th May to return to duty as Mediterranean Fleet flagship after recommissioning. Since 20th March, the flag of the Commander-in-Chief had flown in the "Barham."

At the time the "Queen Elizabeth" left England, the Fleet in the Eastern Mediterranean included only two capital ships, the "Barham" and "Valiant." The number was increased to four by the arrival of the "Queen Elizabeth" and "Repulse" from England. The latter left Portsmouth on 8th June for Malta, to work up there before joining the flag of the Commander-in-Chief.

AMERICA STATION.—On 19th June the Commander-in-Chief hoisted his flag in H.M.S. "Apollo," which had arrived at Bermuda from England and Gibraltar on 1st April. The ship proceeded on a cruise through the Panama Canal to British Columbian waters. The "York" formerly flagship, left Bermuda on the same day for a cruise in the West Indies.

CHINA STATION.—H.M.S. "Cornwall" left Singapore on 28th May for Chatham to undergo large repairs. She is the third ship of her class from China to be taken in hand. The "Cumberland" was commissioned for trials on 13th May after large repairs, and was due to complete to full crew on 1st August. The "Suffolk" is in dockyard hands at Chatham, and will not be completed until early in 1937.

H.M.S. "Capetown," station ship at Hankow during the winter months, arrived at Devonport on 5th June to recommission for further service in China.

H.M.S. "Adventure," temporarily detached for service in the Eastern Mediterranean, arrived at Plymouth on 13th June to recommission. She returned to Alexandria on 11th July.

19TH DESTROYER FLOTILLA.—Certain destroyers from reserve and training units at home, which were sent to the Eastern Mediterranean last autumn and were known for administrative purposes as the 19th Flotilla, have reverted to their

original duties. The flotilla leader "Mackay" was reduced to reserve at standard notice at Devonport on 15th June. The "Thruster," "Torrid" and "Rowena" paid off into reserve at the Nore on 11th June. The "Wessex" came under the administration of the V.A.C., Reserve Fleet, from the date of her arrival at Portsmouth.

MISCELLANEOUS.

MERITORIOUS SERVICE MEDAL.—The use of the abbreviated title "M.S.M." which has hitherto been allowed by custom to naval and marine recipients of the Meritorious Service Medal is to be discontinued. Existing holders of the Medal are, however, authorized to continue to use the title.

DIRECTOR OF CONTRACTS.—The appointment of Mr. E. C. Jubb, O.B.E., as Director of Navy Contracts took effect from 1st July. Mr. Jubb entered the Admiralty in 1908 and dealt with armament contracts during the War.

SERVICE MARRIAGES.—The Naval Chapel in Fort Blockhouse, in the parish of Alverstoke, Gosport, has been added to the list of those licensed under the Marriage (Naval, Military and Air Force Chapels) Act, 1932, for the publication of banns and the solemnization of marriages.

NAVY AISLE, PORTSMOUTH CATHEDRAL.—Paymaster Rear-Admiral G. Grant, II, The Retreat, Southsea, is open to receive on behalf of the Committee of Retired Naval Officers dealing with the extension of the Cathedral at Portsmouth subscriptions towards the Navy Aisle. The cost will be £2,200.

ROYAL MARINES

NEW ADJUTANT-GENERAL.—Major-General William W. Godfrey, C.B., C.M.G., is to be Adjutant-General, Royal Marines, in succession to Lieutenant-General Sir Richard F. C. Foster, K.C.B., C.M.G., D.S.O., to date 2nd October, 1936. Major-General Godfrey was Assistant-Adjutant-General in 1930-33, and Colonel Commandant, Portsmouth Division, 1933-35.

ALLOWANCE FOR COLONELS-COMMANDANT.—In an Order in Council published in the *London Gazette* in July, it was stated that the Admiralty had represented that the emoluments of Colonels Commandant in command of R.M. Divisions were inadequate, and that an increase was justified in view of the financial obligations entailed in their appointments. The former entertaining allowance of 5s. is therefore cancelled, and as from 1st April, 1936, Colonels Commandant in command of R.M. Divisions are to receive a duty allowance of 5s. a day and entertaining allowance of 10s. a day.

ROYAL MARINE POLICE.—Officers on the active or retired lists of the Royal Navy, of the rank of Lieutenant-Commander or above, as well as Royal Marines of the rank of Major or above, are now eligible for appointment to the post of Chief Constable, Royal Marine Police.

Examinations in military law for the ranks of Superintendent and Chief Inspector, and Sub-Divisional Inspector and Inspector, are to be held in March and September yearly. From 1st April, 1937, promotions from within the R.M. Police to the ranks of Inspector and above will be made from those who have passed the appropriate examination.

NEW APPOINTMENT.—Captain J. Brooke, D.S.C., R.N., has been appointed Chief Constable, Royal Marine Police, with effect from 1st August, 1936, in succession to Colonel W. S. Poe, D.S.O., R.M., retired. Captain Brooke retired from the active list of the Royal Navy in 1933.

FOREIGN NAVIES

ARGENTINA

NEW CONTRACTS.—In the first week of June the Argentine Naval Commission in Europe placed contracts with British shipyards for seven destroyers. Three will be built by Vickers-Armstrongs, Ltd., and two each by John Brown and Co. and Cammell, Laird and Co. Including the cost of construction by Vickers-Armstrongs of a school-cruiser for midshipmen to replace the "Presidente Sarmiento," the sum recently incurred by the Argentine Government for new ships in Great Britain amounts to £4,800,000.

DENMARK

ESTIMATES.—The sum allocated to the navy for the financial year 1935-36 was Kr. 21,550,964 (approximately £980,000). Of this Kr. 1,665,000 is for new construction.

For 1936-37 the sum voted for new construction is increased to Kr. 2,090,000. It is understood that this is for the three new submarines due to be laid down this year.

ESTHONIA

NEW SUBMARINES.—Two submarines for Esthonia were launched on 7th July at the Barrow shipyard of Vickers-Armstrongs, and named the "Lembit" and "Kaley." These were the 168th and 169th submarines built at the Barrow naval construction works.

FRANCE

NAVAL POLICY.—The new Minister of Marine in the Popular Front Government announced in the Chamber on 8th July that the Government would continue the post-War renovation programme for the French Navy. In addition, it would undertake extensive additions, including the renovation of certain naval ports, the provision of underground oil reservoirs, and the building of supply and other auxiliary craft.

NEW NAVAL COLLEGE.—On 30th May the new Naval College at Brest, authorized by the Chamber in 1929, was opened by President Lebrun.

NEW BATTLESHIPS.—The "Dunkerque," laid down in 1932, has undergone trials at Brest. The "Strasbourg," laid down in 1934, is to be launched during the autumn.

Instead of "Patrie" and "France," the two 35,000-ton battleships are to be called the "Jean Bart" and "Richelieu."

FLOTILLA LEADER SPEEDS.—Speeds of from 42.7 to 45.25 knots have been achieved by the flotilla leaders "Le Terrible," "L'Audacieux" and "Le Fantasque," completed last year. Long-distance cruises are being carried out by these and similar leaders.

NEW CRUISER.—Fire broke out on 19th June in the "Georges Leygues," one of the six new 7,600-ton cruisers, which was launched at the Penhoet yards, St. Nazaire, on 24th March. The cause of the outbreak was the subject of police investigations. It is understood that this ship will have an armoured belt of 120 mm. to 75 mm. in thickness.

GERMANY

NEW CONSTRUCTION.—The official German *Naval Gazette* published on 17th May gave a list of the ships, built and building, of the German Navy on 1st April, 1936. Included therein were one cruiser, known as "J," and eight submarines additional to the programme previously published, making a total of three heavy cruisers and 36 submarines.

Replying to a question in the House of Commons on 21st May, Lord Stanley said that Germany is under no obligation to declare a programme, and the figure of 28 merely represented that which she was prepared to publish last December. The Admiralty have no reason to believe that Germany's naval construction is not within the limits laid down in the Anglo-German Naval Agreement.

COMMEMORATION AT KIEL.—On the occasion of the 20th anniversary of the Battle of Jutland there was an assembly of the German Fleet off Kiel, and a Review was held by Herr Hitler. On the morning of 30th May he attended the dedication of the naval memorial, an imposing tower, which has been erected to the 34,836 officers and men of the German Navy who perished at sea in the War. This monument had been under construction since 1927 at Laboe, five miles out from the inner harbour at Kiel. The Fleet was commanded by Admiral Foerster, Commander-in-Chief, with his flag in the battleship "Admiral Graf Spee."

PROMOTION OF ADMIRAL RAEDER.—On Herr Hitler's birthday, 20th April, Admiral Raeder, C.-in-C. of the Navy, was promoted to the rank of "General-admiral." The old rank of "Grossadmiral," equivalent to "Generalfeldmarschall," has only been held by the Kaiser, Prince Heinrich, and Admirals Tirpitz and Von Koester.

TRAINING UNDER SAIL.—A new sailing ship, to be used in the training of cadets for the German Navy, was launched on 14th June at Hamburg in the presence of Herr Hitler.

PERSONNEL.—In order to meet the growing requirements of the fleet, special arrangements have been made, besides an increase in the new entry of cadets, to provide officers:—

- (i) A number of petty officers and ex-warrant officers have been given commissioned rank.
- (ii) Over sixty officers have been admitted from the Merchant Navy.
- (iii) A special corps of engineer officers, recruited chiefly from retired naval officers, has been formed in order to release regular officers for service afloat

FLEET AIR ARM.—A Fleet Air Arm was formed early this year with headquarters at Kiel. Known as the "6th Air Command," it includes all coastal air stations. Seaplane training schools have been established at List and Warnemunde, and a naval bombing, torpedo-dropping and air gunnery school at Bug.

The latest capital ships and cruisers are all equipped with catapult aircraft.

ITALY

INCREASED ESTABLISHMENT.—A Royal Decree published on 27th June authorizes a strengthening of the establishment of Flag Officers and members of the Naval Staff, in order "to meet the necessities arising out of the increase in the Fleet." The additional Flag Officers include two Vice-Admirals, one to be added to the establishment from 1st July, 1936, and the other from 1st January, 1937; and three

Rear-Admirals, one from 1st July, 1936, one from 1st January, 1937, and one from 1st July, 1938.

CRUISERS LAUNCHED.—On 21st April, the cruisers "Giuseppe Garibaldi" and "Luigi di Savoia Duca degli Abruzzi" were launched at Trieste and Spezia respectively. They are both of 7,874 tons, 100,000 horse-power, 35 knots. Their armament has been increased from eight to ten 6-in. guns. They will also carry a number of 3.9-in. A.A. guns, and four torpedo tubes.

This makes the total of Italian post-War cruisers nineteen, of which seven are of the maximum Washington tonnage of 10,000, with 8-in. guns, and twelve are from 5,000 to 7,874 tons, with 6-in. guns.

NEW CONSTRUCTION.—Four destroyers of the 1,500-ton "Maestrale" class, armed with four 4.7-in. guns and six torpedo tubes, and with a designed speed of 38 knots, were due to be laid down during the first six months of 1936.

Four escort gunboats of 908 tons and 28 knots were also due to be commenced during the same period.

NEW AIRCRAFT.—Certain cruisers are being modified to enable them to embark aircraft of a new type in replacement of older models.

HOME RESOURCES.—An Italian writer in June, 1936, stated that the Italian fleet is now independent of foreign industry, both for building and maintenance. Even the manufacturing of naval optical instruments, formerly the monopoly of a few foreign companies, has now been taken over by Italian factories.

JAPAN

NEW FORMATIONS.—On 1st June the Navy Department at Tokyo announced the organization of two new squadrons—the Third Battle Squadron, composed of the "Haruna" and "Kirishima," under Vice-Admiral Hara; and the Third Aviation Squadron, consisting of the aircraft tender "Kamoi" and the destroyers "Yunagi" and "Asanagi," under Rear-Admiral Tokari.

NETHERLANDS

NEW CONSTRUCTION.—The new cruiser "De Ruyter" has carried out trials in the North Sea.

According to a Press report the Wilton-Feyenoord Shipbuilding Yard has received an order for two submarines, K.XIX and K.XX. They are for the East Indies squadron.

NEW NAVAL ATTACHÉ.—Lieutenant-Commander Alfred de Booy, Royal Netherlands Navy, has been appointed Naval Attaché to the Netherlands Legation in London. The post had been vacant since 1923. Commander de Booy has twice served in the East Indies, in submarines and as second-in-command and gunnery officer of the destroyer "Kortenaer." For two years he was in the gunnery instructional ship in Holland, and has also been Assistant Chief of Staff at the naval bases of Soerabaya and the Helder.

POLAND

NEW DESTROYERS.—The two destroyers building at Cowes for the Polish Navy are to be called "Grom" (Thunderbolt) and "Blyskawica" (Lightning). The "Grom" was launched on 20th July.

PORTUGAL

NEW CONSTRUCTION.—The last ship of the first part of the Naval Programme the sloop "Infante D. Henrique," was launched on 21st April. This will also be the last ship to be built in the old Naval Arsenal. Future construction will be undertaken in the new Arsenal at Alfeite.

The sloop "Joao de Lisboa" was launched on 21st May.

WARSHIPS FOR SALE.—On 21st June it was reported by *The Times* correspondent at Lisbon that the Portuguese Government had decided to sell by auction the old cruiser "Vasco da Gama," built in 1876 at Blackwall and reconditioned in 1902, as well as two torpedo craft and two submarines.

UNITED STATES

NAVAL APPROPRIATION BILL.—The 1936-37 Naval Appropriation Bill, amounting to \$526,500,000, was passed by Congress in May. This is a record figure for peacetime.

Provision is made for continuing the construction of 84 ships, and for laying down 12 new destroyers and 6 submarines. Authority is also given to lay down two battleships any time after 31st December, 1936, if any signatory of the 1930 London Treaty should lay down capital ships. Each of these vessels will cost \$51,000,000.

Naval personnel is to be increased from 93,500 to 100,000; and the Marine Corps from 16,000 to 17,000 by the end of the financial year.

The first-line strength, including reserves, of the Naval Air Service is to be brought up to 1,259 aircraft by 30th June, 1937.

Dredging operations are to be continued in Pearl Harbour, and it is proposed to construct a floating dock to take the largest capital ship to be stationed there.

NEW CONTRACTS.—Tenders have been called for by the Navy Department, to be received by 19th August, for the construction of six destroyers and three submarines. These nine vessels are included in the 1937 building programme referred to above.

BATTLESHIP CONSTRUCTION.—In reply to an inquiry on 17th June, Admiral Standley, Acting Secretary of the Navy, said that two new battleships would be laid down early next year, and the remaining five old ships (which will have reached the age limit of 26 years by 1942) would be replaced gradually at the rate of one or two annually.

16-INCH GUNS.—On 1st July, Admiral Standley indicated that 16-in. guns would probably be mounted in the new battleships to be laid down in January next. It was pointed out that the United States agreed to 14-in. calibre only on condition that Japan participated in the new London Treaty. Her refusal to do so automatically relieved the U.S. Government of any obligation not to exceed 14-in. calibre.

FLAG CHANGES.—The following flag changes, additional to those recorded in the last JOURNAL, are announced:—

Rear-Admiral J. O. Richardson, Chief of Staff, U.S. Fleet, to command Scouting Force destroyers, in succession to Rear-Admiral Sinclair Gannon, who goes to San Diego to command the 11th Naval District *vice* Rear-Admiral W. T. Tarrant.

Rear-Admiral C. E. Courtney, from command of Cruiser Division II and cruisers, Battle Force, to Office of Naval Operations. He is succeeded by Rear-Admiral J. C. Townsend, from the Navy Department.

Rear-Admiral Sinclair Smith, from command of Battleship Division III, to duty as Commandant, Mare Island Navy Yard. He is succeeded by Rear-Admiral J. K. Taussig, who as a Commander was in charge of the first American destroyer contingent to arrive in European waters during the War.

Rear-Admiral T. C. Hart, to the Navy General Board, and to be succeeded in command of cruisers, Scouting Force, by Rear-Admiral E. B. Fenner. Rear-Admiral Manley Simons to succeed Rear-Admiral Fenner in command of Battleship Division I.

Rear-Admiral C. T. Pettingill, from Battleship Division II, to be Commandant, Washington Navy Yard, and to be succeeded by Rear-Admiral Claude Bloch.

MIDSHIPMEN'S CRUISE.—Under the command of Rear-Admiral Wilson Brown, the Midshipmen's Practice Squadron, composed of the battleships "Arkansas," "Wyoming" and "Oklahoma," left Annapolis on 5th June for a European cruise. It visited Portsmouth from 20th to 27th June; Gothenburg, Sweden, from 3rd to 9th July; and Cherbourg, France, from 21st to 27th July; it was due back at Hampton Roads on 10th August. Over 1,140 midshipmen made the cruise, of whom 349 were in their graduating year.

ARMY NOTES

HIS MAJESTY THE KING

PRESENTATION OF FIELD-MARSHAL'S BATON.—On 26th May, 1936, at Buckingham Palace, Field-Marshal H.R.H. the Duke of Connaught, the senior Field-Marshal in the Army and Great-Uncle to the King, presented the baton of Field-Marshal to His Majesty. Field-Marshals Sir William R. Birdwood, Sir Claud W. Jacob, Lord Milne, the Earl of Cavan, Sir Philip W. Chetwode and Sir Archibald A. Montgomery-Massingbird accompanied the Duke. The baton, which was a gift from the assembled Field-Marshals, bore the inscription: "His Majesty King Edward VIII, Field-Marshal, January 21, 1936," and is about 22 inches long and 1 inch in diameter. The staff is covered with crimson velvet with gold lions *passant gardant* in eight rings upon it. At the top there is a chased gold mount with a wreath of rose, shamrock and thistle surmounted by St. George and the Dragon. The lower end has a mount of similar design.

TROOPING OF THE COLOUR.—The King attended the annual ceremony of the Trooping of the Colour on 23rd June, 1936, at the Horse Guards. His Majesty wore the uniform of Colonel-in-Chief of the Grenadier Guards and rode his favourite charger "Cobham," a dark bay with three white stockings, trained by the Metropolitan Mounted Police. Detachments from the Grenadier, Coldstream, and Irish Guards furnished the eight guards for the ceremony, while the 1st Battalion Grenadier Guards provided the escort for the King's Colour, which was trooped. The ancient ritual, which was carried out with extreme precision and steadiness, was witnessed by vast crowds of spectators. The mounted officers of the Guards have discarded boots and breeches for the red-striped overall, which was the type of full dress uniform worn for the last time on service in the Crimea.

PRESENTATION OF COLOURS.—The King presented new Colours to the 1st and 3rd Battalions, Grenadier Guards, 1st, 2nd and 3rd Battalions, Coldstream Guards and 2nd Battalion Scots Guards on 16th July, 1936, at Hyde Park. His Majesty King George V last presented new Colours to the Guards in 1921. The 2nd Battalion Grenadier Guards and 1st Battalion Scots Guards are serving abroad and will receive new Colours later. The King, accompanied by the Duke of York and escorted by a Captain's Escort of the Blues, rode from Buckingham Palace to the Park through Hyde Park Corner and the Broadwalk. The six battalions were drawn up in Mass, facing east with the Bands of the three Regiments in the centre. The Queen occupied the Royal Dais, opposite the saluting point and flanked by the Stands occupied by the Old Comrades.

Major-General B. N. Sergison-Brooke, C.B., C.M.G., D.S.O. (in command of the Parade), the Brigade Major and Aide-de-Camp and the Regimental Lieutenant-Colonels and Adjutants were mounted; all other officers, including Battalion Lieutenant-Colonels, were dismounted. The Rev. E. H. Thorold, C.B., C.B.E., M.A., D.D., Chaplain-General to the Forces conducted the Consecration Service. After the ceremony, the troops marched past in column of companies, reformed and gave a Royal Salute.

APPOINTMENTS.

The King has been pleased to approve the following appointments:—

PERSONAL AIDES-DE-CAMP TO HIS MAJESTY.—General H.R.H. The Duke of York, Colonel, Scots Guards, Colonel-in-Chief, 11th Hussars (Prince Albert's Own), The Somerset Light Infantry (Prince Albert's), The East Yorkshire Regiment (The Duke of York's Own), The Royal Army Ordnance Corps, and The Leicestershire Yeomanry (Prince Albert's Own).

Major H.R.H. the Duke of Gloucester, 10th Royal Hussars (Prince of Wales's Own), Colonel-in-Chief, The Gloucestershire Regiment, Honorary Colonel, Cambridge University Contingent of the Senior Division, Officers Training Corps.

H.R.H. the Duke of Kent, Colonel-in-Chief, The Queen's Own Royal West Kent Regiment.

Honorary Major-General H.R.H. Prince Arthur of Connaught, Colonel-in-Chief, The Royal Scots Greys (2nd Dragoons).

Honorary Major-General the Earl of Athlone, Colonel, The Life Guards, and the 7th Queen's Own Hussars, Governor and Constable of Windsor Castle, Honorary Colonel, University of London Contingent of the Senior Division, Officers Training Corps.

The Earl of Harewood, Honorary Colonel 1st City of London Regiment (The Royal Fusiliers).

COLONEL-IN-CHIEF.—His Majesty has been pleased to become Colonel-in-Chief of the Royal West African Frontier Force, the King's African Rifles and the Ceylon Defence Force.

FIELD MARSHAL.—General Sir Cyril J. Deverell, G.C.B., K.B.E., Colonel, The West Yorkshire Regiment, Chief of the Imperial General Staff, to the rank of Field Marshal.

AIDE-DE-CAMP GENERAL.—General Sir George D. Jeffreys, K.C.B., K.C.V.O., C.M.G., as Aide-de-Camp General to the King, in succession to General Sir Cyril J. Deverell, G.C.B., K.B.E., Colonel, The West Yorkshire Regiment (The Prince of Wales's Own), who has been promoted to the rank of Field-Marshal.

AIDES-DE-CAMP TO THE KING.—Colonel (temporary Brigadier) T. A. A. Wilson and Colonel (temporary Brigadier) E. P. Quinan, O.B.E., Indian Army.

COLONELS OF REGIMENTS.—Colonel (honorary Major-General) the Earl of Athlone, K.G., P.C., G.C.B., G.C.M.G., G.C.V.O., D.S.O., D.C.L., LL.D., as Colonel, The Life Guards.

Colonel (honorary Brigadier-General) L. J. Wyatt, D.S.O., as Colonel, The North Staffordshire Regiment (The Prince of Wales's).

Major-General A. J. McCulloch, C.B., D.S.O., D.C.M., as Colonel, The Highland Light Infantry (City of Glasgow Regiment).

Lieutenant-General (honorary General) Sir Hubert de la P. Gough, G.C.M.G., K.C.B., K.C.V.O., as Colonel of the 16th/5th Lancers.

SUPPLEMENTARY ESTIMATE.

The Secretary of State for War has presented the Supplementary Estimate for 1936 to the House of Commons. This estimate is in addition to the Annual Estimates described in Army Notes in the May number of the JOURNAL. The further sum required for the year ending 31st March, 1937, amounts to six million six hundred

thousand pounds. The total estimates amount, therefore, to £55,881,000, the largest total since 1922. The chief increases are as follows: cost of conveyance by sea, £285,000; R.A.S.C. mechanical transport, £280,000; Clothing, £100,000; General Stores, £283,000; Warlike Stores, £2,660,000; machine tools, £1,000,000. These sums are, it should be remembered, not totals but increases over sums already voted and will be expended before the end of the financial year. Warlike stores include guns, vehicles, ammunition, rifles, anti-gas equipment, searchlights, and signal and bridging equipment.

HOME

THE ARMY COUNCIL.

Mr. Duff Cooper, Secretary of State for War, has appointed Engineer Vice-Admiral Sir Harold Brown, K.C.B., to the new post of Director-General of Munitions Production. Sir Harold Brown will have a seat on the Army Council and will be charged with the responsibility for the co-ordination and speeding-up of the supply of munitions. He was commissioned to the Royal Navy in 1900 as Assistant-Engineer and served with the Channel Squadron. The beginning of the War found him in the Department of the Engineer-in-Chief and in 1917 and 1918, he was afloat with the Grand Fleet. After the War, he was appointed assistant Naval Attaché in Washington, and was there during the Washington Conference. The Board of Admiralty appointed him, in April, 1927, to the post of Assistant Engineer-in-Chief of the Fleet. In March, 1930, he became Deputy Engineer-in-Chief, and two years later, received his present rank. He has been closely associated with technical developments in the Navy during the greater part of his service. He will assist the Master-General of the Ordnance and will take over some of his duties.

The War Office announces the following:—

PROMOTIONS.

Lieutenant-General Sir Walter M. St. G. Kirke, K.C.B., C.M.G., D.S.O., Colonel Commandant, R.A., Director-General of the Territorial Army, to be General; 20th April, 1936.

Major-General Sir H. Karslake, K.C.S.I., C.B., C.M.G., D.S.O., is promoted Lieutenant-General; 20th April, 1936.

Colonel (temporary Brigadier) E. A. Beck, D.S.O., A.D.C., to be Major-General; 20th April, 1936.

Lieutenant-General Sir Henry E. ap. R. Pryce, K.C.B., C.M.G., D.S.O., to be General, from 1st April, 1936, and Aide-de-Camp General to His Majesty. General Sir ap. Rhys Pryce has had a unusually varied and interesting career. He was posted to the Indian Army Unattached List in 1895, joining a year later the present 9th Jat Regiment. Transferring to the Royal Indian Army Service Corps, he was O.C. 12th Mule Corps in the Tibet Campaign of 1904. He then went to the Staff College, Quetta, as a student and later served as D.A.Q.M.G., France; as G.S.O.I., of the 38th Welsh Division; and for over a year commanded the 113th Infantry Brigade. He received eight mentions in despatches and was promoted brevet Lieutenant Colonel and brevet Colonel with the awards of the C.M.G., D.S.O., and Belgian Croix de Guerre. After starting the Senior Officers' School, Belgium, and commanding it for four years, he became Director of Supplies and Transport, India. He commanded in succession the Presidency and Assam, and Deccan Districts, and later was appointed Master-General of the Ordnance, India.

Major-General Sir Arthur W. H. M. Moens, K.C.B., C.M.G., D.S.O., to be Lieutenant-General; 1st April, 1936.

Colonels (temporary Brigadiers) F. L. Nicholson, C.B., D.S.O., M.C., and H. L. Haughton, C.I.E., C.B.E., Aides-de-Camp to the King, to be Major-Generals; from 1st April and 23rd April, 1936, respectively.

Colonel (temporary Brigadier) R. H. Carrington, D.S.O., R.A., to be Major-General; 29th June, 1936.

Colonel (temporary Brigadier) A. I. Musson, C.B., Chief Paymaster, The War Office, to be Major-General; 25th June, 1936.

APPOINTMENTS.

Major-General R. H. Haining, D.S.O., to be Director of Military Operations and Intelligence; 1st September, 1936. General Haining was educated at Uppingham, the Royal Military Academy, and later at the Staff College. He joined the R.A. in 1901 and went over to France with the B.E.F. in 1914, remaining there until 1918. He held numerous Staff appointments in France, including Brigade Major, R.A., D.A.A.G., and G.S.O. (II). After the War, he served on the Staff at the War Office, Aldershot and Eastern Commands, and in 1934 was Deputy Director of Military Operations and Intelligence. He was appointed Commandant of the Imperial Defence College in January, 1935.

Major-General A. F. Brooke, D.S.O., to be Director of Military Training; 15th August, 1936.

Major-General D. J. C. K. Bernard, C.B., C.M.G., D.S.O., to be Commander, the 5th Division; with effect from May, 1937.

Lieutenant-General Sir Charles Grant, K.C.V.O., C.B., D.S.O., to be General Officer Commanding-in-Chief, Scottish Command; from 19th February, 1937.

Major-General A. P. Y. Langhorne, D.S.O., M.C., to be Inspector of the Royal Artillery; 15th August, 1936.

GENERAL.

THE ROYAL SCOTS.—H.R.H. the Princess Royal, Colonel-in-Chief, The Royal Scots (The Royal Regiment) inspected the 1st Battalion on 17th June, 1936, at Dover Citadel. Lieut.-Colonel E. H. M. de Stackpoole, M.C., met Her Royal Highness at the station and conducted her to the Citadel, where she was received by Major-General G. C. Lock, C.B., C.M.G., C.B.E., D.S.O., the Colonel of the Regiment. The Princess Royal took lunch with the Officers and later inspected the Battalion on a Ceremonial Parade. Her Royal Highness presented long-service medals, witnessed a display of physical training and, before leaving for London, had tea with the families of the Regiment.

ANTI-TANK RIFLE.—The new anti-tank rifle has been named "The Boys," to perpetuate the memory of the late Mr. C. H. Boys, Senior Assistant Superintendent of the Design Department at the Royal Arsenal, Woolwich. Mr. Boys was chiefly responsible for the design of this weapon and also played a prominent part in the adaptation of the "Bren" gun for the British Army.

THE ESSEX REGIMENT'S COLOURS.—The new Regimental Colour will have a purple groundwork to conform to the new facings of the uniform, which will shortly be approved. This will be the only Colour of this shade in the Army.

SURPLUS ARMY HORSES IN EGYPT.—In view of numerous inquiries regarding the proposed method of disposing of Army horses which will become surplus in Egypt when the units to which they belong are mechanized, the War Office draws attention to the statement made by the Financial Secretary of the War Office (Sir Victor

Warrender), in reply to a question in the House of Commons, that "all Army animals in Egypt which, on the mechanization of their unit, cannot be absorbed into another unit, will be destroyed under military supervision. None will be sold to the local inhabitants."

BISLEY.—Company Sergeant-Major W. Edwards, 2nd Battalion, The Duke of Cornwall's Light Infantry, has won the Army Championship, the King's Medal for the best shot in the Regular Army at home, the Watkin Cup, and the Army Rifle Association's Gold Jewel. C.S.M. Edwards was born at Malvern and has fourteen years service with the D.C.L.I. The competition this year, for the first time, carried with it the King's Medal, in addition to the Gold Jewel, which has been the decoration since 1887. General Sir John Burnett-Stuart, G.O.C.-in-Chief, Southern Command, and President of the Army Rifle Association presented the King's Medal to C.S.M. Edwards and read a telegram from His Majesty, who, as Colonel-in-Chief of the Duke of Cornwall's Light Infantry, sent his special congratulations to the winner.

ARMAMENT FACTORIES.—It is announced that certain of the factory activities, now carried out at Woolwich Arsenal and Waltham Abbey, will be transferred to localities less open to air attack. The War Office has selected two sites, one at Chorley (Lancs.) and the other at Bridgend (S. Wales) for the operations of shell filling and a third in Scotland for the manufacture of explosives.

RECRUITING.—Mr. Duff Cooper, Secretary for War, in a written Parliamentary answer on 22nd May, stated that the deficit in the strength of the Regular Army was over 11,000. This is about the same as the deficit for July, 1914, but on that date the numbers actually serving were considerably larger. On 9th June, it was announced that 10,371 recruits had joined the Army in the first five months of 1936, compared with 12,229 in the corresponding period last year.

TATTOOS.—The Secretary of State for War stated in Parliament that the Army Council had laid down certain general principles with regard to Tattoos. No public money was to be spent and they were not to interfere with military training; items should either exemplify skill at arms, drill and military music or portray episodes in British Military History prior to 1914. The exhibition of new and experimental methods of warfare was forbidden. This statement should be studied in connection with the well-written and interesting article entitled "Modern Infantry Discipline," by A Field Officer, published in the JOURNAL for August, 1934.

VOLUNTARY AID DETACHMENTS.—The War Office has accorded official recognition to 150 men's and 1,025 women's detachments, comprising a total of 29,269 members. During the past year, the numbers enrolled have greatly increased. Of the total number, 6,778 have undertaken the "mobile" obligation to serve overseas if required in an emergency. "Immobile" members are liable only for service within reach of their own homes.

PETROL FROM COAL.—Sir Thomas Inskip, Minister for Co-ordination of Defence, stated in the House of Commons that the mechanized motor services of the Forces had been experimenting with fuel distilled from British coal with satisfactory results.

APPRENTICE TRADESMEN.—The War Office announces that about 200 vacancies, will exist in the Royal Army Ordnance Corps in October, 1936, for ultimate training as Fitters, Motor Fitters, Instrument Mechanics and Wireless Mechanics. This is an opportunity for boys to learn a trade free of all cost to themselves or their parents.

During their apprenticeship they will receive pay, in addition to their maintenance, and will also be granted liberal holidays.

WORK FOR DISCHARGED SOLDIERS.—During the three months ending 30th June, 1936, 978 soldiers completed courses of instruction at the Army Vocational Training Centres, and during the same period 843 students, including a number who had left the Centres in previous months, were placed in employment.

THE TERRITORIAL ARMY

CAPTAIN-GENERAL OF THE H.A.C.—The King, who assumed the appointment of Captain-General and Colonel of the Honourable Artillery Company shortly after his accession, has signified his intention of reverting to the old title and being known as Captain-General.

THE TERRITORIAL MAGAZINE.—The Territorial Magazine, the first issue of which appeared in June, is excellently calculated to serve the purpose for which it is produced—that of serving the interests of officers and all others interested in the welfare of the Defence Forces, and the O.T.Cs and Cadet units throughout the country. It is obtainable at all bookstalls, price one shilling.

RECRUITING.—The improvement in recruiting is being well maintained; 4,393 recruits were finally approved in June as compared with 2,856 in June last year. During the past quarter, 16,145 men joined, compared with 10,004 during the same period last year.

ANTI-AIRCRAFT UNITS.—The War Office has announced the conversion of seventeen units in the Midlands and North, into anti-aircraft defence units. The list is as follows :—

To be Anti-Aircraft Brigades of the Royal Artillery.

73rd (Northumbrian) Field Brigade, Royal Artillery.

55th (Northumbrian) Medium Brigade, Royal Artillery, and the 150th (Tyne-mouth) Battery of the 51st (Midland) Medium Brigade, Royal Artillery (two Brigades).

6th/7th Battalion, The Manchester Regiment.

8th (Leeds Rifles) Battalion, The West Yorkshire Regiment (The Prince of Wales's Own).

5th Battalion, The York and Lancaster Regiment.

6th Battalion, The Royal Warwickshire Regiment.

To be Anti-Aircraft Battalions of the Royal Engineers.

6th (Rifle) Battalion, The King's Regiment (Liverpool).

7th Battalion, The Lancashire Fusiliers.

6th Battalion, The Sherwood Foresters (Nottinghamshire and Derbyshire Regiment).

5th Battalion, The North Staffordshire Regiment (The Prince of Wales's).

7th (The Robin Hoods) Battalion, The Sherwood Foresters (Nottinghamshire and Derbyshire Regiment).

5th Battalion, The Duke of Wellington's Regiment (West Riding).

4th Battalion, The Leicestershire Regiment.

5th Battalion, The Royal Warwickshire Regiment.

5th Battalion, The Lincolnshire Regiment.

7th Battalion, The Durham Light Infantry.

The Army Council desire to acknowledge with gratitude the public spirit displayed by these units and their readiness to undertake the new responsibilities which

are of such outstanding importance to the defence of the country. An exceptionally high standard of efficiency and readiness to defend this country against hostile air attack will be necessary, since the new role entails such units being ready for action immediately on the outbreak of war, or even earlier, and no opportunity for the completion of training after mobilization can be expected. In the circumstances, the Army Council wish to stress the special importance of Anti-Aircraft Defence units being up to establishment in both officers and men in peace-time.

NOMENCLATURE.—The title of Air Defence Brigade has been changed to Anti-Aircraft Group and, in future, Anti-Aircraft Searchlight Groups, R.E., will be known as Anti-Aircraft Battalions, R.E. The object is to avoid confusion between ground and air work. The term "Air Defence" will in future cover the field of combined defence by aircraft and anti-aircraft units. "Aircraft Defence" implies action by aircraft alone whereas "Anti-Aircraft Defence" will apply only to action by anti-aircraft units. The Territorial Army has already adopted the titles of Anti-Aircraft Division and Brigade.

BISLEY.—Major D. M. Lindsay, 7th Battalion, The Sherwood Foresters, has won the King's Medal for the Territorial Army. Major Lindsay served for 26 years in the Regular Army before becoming a Territorial and is well known as a rifleman. He was for some years at the Small Arms School at Netheravon, and in 1934 won the Territorial Army Championship.

The Territorial Army team won the Inter-Services Match against the Regular Army, the Royal Navy, the Royal Marines, the R.A.F., and the O.T.C. Senior Division, for the first time since 1927.

INDIA

Reorganization of infantry at Home on a Brigade basis of one machine-gun to three rifle battalions and the expected arrival, at the end of 1939, of the first British machine-gun units has created new problems for India. The Home organization is designed for operations in a well-developed country against a first-class enemy. It allows for a large increase in the proportion of supporting arms to rifles, for anti-tank defence and for mechanized reconnaissance.

In India, the situation is different. The role of the Army in India is for the defence of India—requiring vigorous action under "small war" conditions—against a good second-class enemy, probably on such difficult terrain as exists on and beyond the frontiers of India. Such an adversary is unlikely to possess powerful armoured units or large numbers of modern aircraft. Nevertheless, the possibility of rapid development to meet unforeseen demands must not be lost sight of.

The need for a great increase in supporting arms is not pressing. The existing infantry organization in India in which a proportion of heavy machine guns are included in each battalion, is well balanced and has proved itself in recent frontier fighting. The transport of such large numbers of light automatic weapons—52 per rifle battalion—allowed for in the Home organization presents great difficulties under Indian conditions.

The comparatively backward state of development of communications and industry and the difficult nature of the probable theatres of war are further obstacles to a full measure of mechanization. These are some of the questions which present themselves. Nevertheless uniformity throughout the armed forces of the Empire is obviously most desirable and the authorities in India have, it is understood, no intention of acting as a brake on necessary measures of reform. The whole question

is receiving the fullest consideration, and there is every hope that in the near future a satisfactory solution will be produced.

RESERVE OF OFFICERS.—The London Gazette, 24th July, 1936, announced the conditions of service and rules for appointment to the Indian Army Regular Reserve of officers. The rules, it appears, apply to the bulk of officers, who have retired in the ordinary way on pension or gratuity. Age limits are laid down; these include: Lieutenant, 45 years; Captain or Major, 50 years; Lieutenant-Colonel, 55 years.

FOREIGN

BELGIUM

The completion of the French North-Eastern defences (Maginot Line) may affect adversely the relative position of Belgium as compared with her powerful neighbour Germany. In making their plans for a possible war in the West, the German General Staff are unlikely to undertake a serious frontal attack on a strongly garrisoned line of fortifications and may thus be compelled to turn their attention elsewhere. Hence the activity displayed in strengthening their defences by the three "flank" countries, Holland, Belgium and Switzerland.

In October, 1934, the King appointed General Van den Bergen as Chief of the General Staff in place of Lieutenant-General Nuyten, who had resigned owing to differences of opinion over defence matters. Since then General Van den Bergen has had many serious problems to consider. Amongst others, there is the question of roads. The German Government, according to Mr. Edgar Mowrer, *Chicago Daily News*, in an interview with *The Times*, are constructing a network of *Autostrasse* (motor roads) in North-West Germany along the frontiers of Holland and Belgium. These roads, photographs of which have appeared in the Press, appear to be mainly of a strategical and military character and include the following:—(a) Hanover-Osnabrück-Gronau-Dutch frontier, opposite Enschede. (b) Bremen-Osnabrück-Münster-Wesel. (c) Münster-Dortmund-Duisburg. A new bridge, capable of carrying several lines of traffic is said to be under construction, over the Rhine south of Duisburg. (d) Dortmund-Düsseldorf-frontier of Dutch Limburg. (e) Dortmund-Elberfeld-the Rhine.

A brief study of the map will reveal the most interesting possibilities in connection with the employment of mechanized forces along these roads or their employment as alternative lines of communication to railways. The Belgian Government are however strengthening their defences along the north-eastern frontier and at Liège. In October, 1934, the King opened the second section of the Albert Canal from Ternaay to Laaken. This canal which runs along the north-eastern border is intended to draw traffic from Louvain across Belgium to Antwerp and to divert the trade which formerly passed via Rotterdam. But it has also a definite military value as a line of defence and a formidable obstacle against a sudden attack by mechanized forces.

In February, 1936, Mons. Devize, Minister of Defence, stated before the joint Parliamentary Commissions of the Chamber and the Senate, that the duration of army service would have to be extended. He explained that the peace strength of the Army was insufficient to man the defences and secure the safety of the country. The position is particularly weak during the period October to April. During these winter months, the Army consists chiefly of recruits under training, who are not fit to take the field in a sudden emergency. It was necessary, he said, to lengthen the

period of service of about one-third of the men under arms in order to bridge the gap. This proposal, although supported by the Socialist members of the Cabinet, is being strongly opposed by certain Socialist and Flemish Catholic organizations.

FRANCE

The Bill to bring about the nationalization of the armament industry has been passed by the Chamber. This measure authorizes the Government to take over all firms which are chiefly engaged in the manufacture of arms and ammunition. Other firms which deal only partly in armaments will be brought under national control either by the Government purchasing a majority of the shares or by the appointment of official inspectors.

Mons. Daladier, Minister of Defence, made a speech to the Committee of the Chamber on the Army Estimates in which he said that he was strongly opposed to any reduction in the period of military service. This has lately been fixed at two years with the Colours. The conditions of service are, he said, to be improved, and after spending the first six months of their recruits training in barracks the men will live in camps, where special facilities will be afforded for sport. The Minister also intends to make it easier for men to be commissioned from the ranks. There is, he said, to be no tampering with the system or strength of the Army Reserve. The North-Eastern defences were strongly garrisoned and were, in his opinion, proof against any sudden attack. There was no truth in the rumour that Mulhouse would be evacuated on mobilization.

GERMANY

The new barracks for the expanded Army are reported to be well sited, bright and cheerful. Only military considerations govern the arrangement of the buildings. They are central heated throughout, give the soldier a minimum of barrack fatigue work, and what remains is largely performed by civilians. A battalion has one barrack block for H.Q. and one for each Company, with another block for the Institute. Similarly, in an artillery Brigade, Brigade H.Q. has one block and each battery another, with a separate institute building.

Each company block is a three-storeyed building; in addition roof space and basement are adapted for use. Less than half the block is used for sleeping accommodation. On the ground floor, there are offices, inter-connected by hatches wherever desirable; also the company S.M.'s quarter and a quarter for the subaltern officer. In addition to the Company Commander, the Orderly Officer, the Company S.M. and specialist N.C.O's have offices. Officers are not required to share offices either with each other or with clerks. The subaltern officers' quarter forms a self-contained flat, shut off from the rest of the block by its own front door. It consists of bedroom, sitting-room, bathroom, W.C., kitchenette (sufficient for cooking a light meal) and a box-room.

The first floor of each block consists of barrack rooms and the second floor primarily of lecture-rooms, but there are sometimes also some barrack rooms. The rooms are normally designed for four to six men and a lance-corporal. The rooms are made as cheerful as possible; the walls are light coloured; curtains are provided, also a chair per man and a table for every two men. As each table has two drawers with locks, there is one drawer for each man; the tables can be fitted together for meals. To encourage comradeship and team spirit, the men have all their meals, except their midday dinner together in their barrack room. Each man has an enamel painted wooden wardrobe. This consists of hanging-cupboard and of

shelves, one of which is glass-covered for food. A special cupboard is provided for brooms, etc.

The men can either sit in their barrack rooms or in reading-rooms which are situated on the same floor. These reading-rooms are provided with sofas and arm-chairs. The rooms are bright by day and have ample electric light. In addition, there is a dim bulb above the door, so that the orderly-sergeant can make check-rounds without turning on a bright light and disturbing the occupants. N.C.O.'s are allowed to have private furniture in their rooms. All barrack rooms appear to have parquet floors. They are well heated by steam pipes. A broad passage runs lengthways along the central axis of each floor with rooms on both sides. The passages are so wide that the windows at the ends provide ample light and the men can rush along them when summoned to fall in outside.

SWITZERLAND

The Federal Council have announced the formation of three new categories of troops: (a) *Grenschutz*—for the immediate defence of the frontier; formed from soldiers living in the immediate vicinity of the frontier; their task is to man the fortifications and anti-tank defences near their own homes and resist any sudden attack by motorized and mechanized forces. (b) "Defending Divisions"; intended to mobilize quickly and occupy prepared defensive positions located at strategic points. (c) "Marching Divisions"; recruited from the central regions round Berne and the Lake of Lucerne; their role is to act as the General Reserve.

The *Luftschutz*, a volunteer organization, based on the local fire brigades, has undertaken to make arrangements for the protection of the civil population against air attacks.

UNITED STATES

The 29th Infantry Regiment was reorganized on a new model in June, 1935, and practical and theoretical tests of the new organization have been taking place during the winter.

The main features of the new organization are as follows: the machine-gun companies have been taken from the three rifle battalions and consolidated in a fourth or "special-weapons" battalion in which are grouped all the heavy weapons of the regiment. All riflemen are armed with the new semi-automatic rifle. An improved Browning automatic rifle, whose characteristics approach those of a light machine gun, replaces the present model. The rifle section consists of two rifle squads and one light machine-gun squad. The regiment is motorized, and the strength is approximately 113 officers and 2,454 other ranks.

The regiment consists of: Regimental Headquarters and Headquarters Company; a service company; one "special-weapons" battalion, including three machine-gun companies of eight guns each (calibre .30), one heavy machine-gun company of twelve guns (calibre .50); one mortar company of six 81-mm. mortars; and three rifle battalions of three rifle companies each. Regimental Headquarters Company includes the communications personnel and equipment for the four battalions. The old intelligence platoon is replaced by a reconnaissance and intelligence platoon, which will perform both functions. It is equipped with motor cycles to heighten mobility and facilitate communication. The pioneer platoon has been eliminated. The service company is organized and equipped on the basis that the regiment will normally operate as part of a division, and that reserves of supplies carried or provided by the higher echelons will be reasonably available on call. The transport in the service company includes combat vehicles for ammunition

and fighting equipment, ration and kitchen vehicles and baggage lorries for kits of officers and other ranks. This scheme permits any category of supplies (ammunition, rations, kits), or all, to be sent forward without reloading.

The headquarter unit of all four battalions has been reduced to a "detachment." This provides a small working nucleus to which may be added such communications, personnel, and equipment from the Regimental Headquarters as the situation requires. The "special-weapons" battalion includes all weapons which are not normally man-carried and is entirely motorized. A special mounting, or light hand-cart is being developed for the movement of weapons by man-power when they leave the lorries. This pool of heavy weapons gives the regimental commander a reservoir of tremendous fire power; an arrangement which, it is believed, will make for a more flexible and efficient employment of these weapons, since the subordinate units of this battalion may be distributed to serve the regimental plan in the best possible way. The grouping of these weapons is also desirable from the point of view of mobility. Rate of movement, type of route and assembly areas will differ from those of rifle battalions because of the motor transportation involved. Even in training these units pursue a semi-independent course. Thus, from a tactical, logistical and training standpoint, the new organization is expected to simplify procedure.

A rifle company consists of three platoons of two sections each. One squad in each section is organized as a light machine-gun squad and is equipped with two of these weapons and provided with ammunition carriers. Although the Browning automatic rifle with the improved bipod rest is in use at present, a light man-carried machine gun is being sought for. The improvements in the automatic rifle have increased its effective rate of fire, and hence its ammunition requirements. Rather than add carriers to the present squad, the light machine-gun squad was formed. Tactical considerations also dictated this departure, for in the attack the light machine gun will seek firing positions to cover the advancing riflemen.

The Chief of Staff in his annual report for 1935, stated: "The process of stripping from combat units all useless impedimenta must go further than the mere removal of contingent supplies and equipment. It will likewise affect organization. . . . The small units of the front line—certainly to include the battalion of infantry—must abandon the attempt to include within themselves every type of tactical power of which they may have occasional need. Emergency fires must be furnished by supporting troops separately organized. . . . Our whole tactical organization must be developed in this concept." (*Journal of the U.S. Infantry Association*, February, 1936.)

AIR NOTES

ROYAL AIR FORCE

HIS MAJESTY THE KING

VISIT TO R.A.F. STATIONS.—Flying in a D.H. Dragon Rapide aircraft, H.M. the King, accompanied by H.R.H. the Duke of York and Air Chief Marshal Sir Edward L. Ellington, Chief of the Air Staff, visited the R.A.F. Stations at Northolt, Wittering, Mildenhall, Martlesham Heath, and Hendon on Wednesday, 8th July. This is the first occasion on which a British sovereign has carried out an inspection of the Royal Air Force by Air.

At Northolt His Majesty inspected Nos. 1 and 111 (Fighter) Squadrons, and a flight of No. 19 (Fighter) Squadron, and afterwards witnessed a flying demonstration.

At No. 11 Flying Training School, Wittering, an inspection of pilots under instruction, and airmen's quarters was followed by luncheon in the Officers' Mess.

At Mildenhall, the King inspected Nos. 38, 40 and 99 (Bomber) Squadrons and three types of bomber aircraft.

At Martlesham Heath, he inspected the latest types of fighter, bomber and other service aircraft. Tea was taken by the Royal Party in the Officers' Mess, after which His Majesty proceeded by air to Hendon.

SUPPLEMENTARY ESTIMATE, 1936.

A Supplementary Estimate for £11,700,000, providing generally for the expenditure which it will be necessary to incur during the current financial year in order to implement the air defence policy announced by the Prime Minister on the 9th March was issued on 9th July, 1936. This includes provision for an additional sum of £8,055,000 to cover payments likely to mature before 31st March next as the result of placing long term orders for the large numbers of airframes and engines and such ancillary equipment and stores as will be required under the programme.

Provision is also made for an increased expenditure of £2,750,000, necessitated by unexpected progress in the construction of stations already approved; the need for additional storage accommodation for the aircraft referred to above; for several more stations at home and additions to stations abroad.

ROYAL AIR FORCE EXPANSION.

Steady progress in the expansion of the Royal Air Force has been maintained during the period under review. Sites for three new stations—at Bassingbourne (Cambs.), Swanton Morley (Norfolk), and Wattisham (Suffolk)—have been acquired, and the constructional work at the various new stations tabulated in last quarter's notes is proceeding satisfactorily.

Headquarters were formed at the new stations at Finningley, Driffild, and Wyton on 30th July, and the aerodromes at these stations will be available for

general use early in September, and that at Scampton early in October, 1936. The Armament Training Camps at Penrhos and West Freugh may also be expected to open in the early autumn.

Candidates for pilots and airmen are coming forward in a steady flow, and no difficulty is anticipated in obtaining the numbers required for entry later in the year.

A total of eighteen new Squadrons (i.e., 15 Regular and 3 Auxiliary) have been formed for the expanded Home Defence Force.

PROMOTIONS.

The undermentioned promotions were made with effect from 1st July, 1936:—

AIR MARSHAL TO BE AIR CHIEF MARSHAL.—Sir John Miles Steel, K.C.B., K.B.E., C.M.G.

AIR VICE-MARSHAL TO BE AIR MARSHAL.—P. B. Joubert de la Ferté, C.B., C.M.G., D.S.O.

GROUP CAPTAINS TO BE AIR COMMODORES.—P. Babington, M.C., A.F.C., G. R. M. Reid, D.S.O., M.C., R. M. Hill, M.C., A.F.C., A.D.C., A. G. R. Garrod, O.B.E., M.C., D.F.C., C. W. H. Pulford, O.B.E., A.F.C.

WING COMMANDERS TO BE GROUP CAPTAINS.—A. S. Morris, O.B.E., R. H. Kershaw, L. C. Keeble, A. W. F. Glenly, M.C., D.F.C., F. E. P. Barrington.

HONOURS AND AWARDS.

The following awards were published in the *London Gazette* dated 23rd June, 1936 (King's Birthday Honours):—

C.B. (Military).—Air Vice-Marshals P. B. Joubert de la Ferté, C.M.G., D.S.O., and A. W. Iredell, M.R.C.S., L.R.C.P., K.H.P.

C.B.E. (Military).—Group Captain H. A. Treadgold, M.D., B.S., M.R.C.S., M.R.C.P.

M.V.O. (Fourth Class).—Flight Lieutenant H. M. Mellor.

O.B.E. (Military).—Wing Commander T. Fawdry, M.B.E., and Squadron Leaders R. S. Sorley, D.S.C., D.F.C., H. E. Forrow, C. A. Bouchier, D.F.C., and C. E. N. Guest.

M.B.E. (Military).—Flight Lieutenants A. E. Groom, D.S.M., and J. F. Young, M.M., and Flying Officer (Hon. Flight Lieutenant) J. L. Jack, M.C. (Auxiliary Air Force).

A.F.C.—Squadron Leader A. F. Lang, M.B.E.; Flight Lieutenants D. F. McIntyre (Auxiliary Air Force), and H. F. Jenkins (Reserve of Air Force Officers), and Flying Officer J. K. Quill (Reserve of Air Force Officers).

The following awards in recognition of gallant and distinguished service rendered in connection with the Mohmand operations on the North West Frontier, India, during the period 15th–16th August and 15th–16th October, 1935, were published in the *London Gazette* of 8th May, 1936:—

D.S.O.—Squadron Leader K. H. Riversdale-Elliot.

D.F.C.—Squadron Leader H. F. Battle, and Flight Lieutenants N. C. Carter and A. F. Hutton.

MENTIONS.—Wing Commander W. B. Farrington, D.S.O., and Squadron Leaders K. H. Riversdale-Elliot, J. MacG. Fairweather, D.F.C., H. P. Lloyd, M.C., D.F.C., R. T. B. Houghton, A.F.C., S. D. Culley, D.S.O., and Squadron Leader (now Wing Commander) P. F. Fullard, D.S.O., M.C., A.F.C., Flight Lieutenant H. G.

Brookman, Flight Lieutenant (now Squadron Leader) B. E. Embry, A.F.C., Flight Lieutenants T. J. Arbutnot, E. C. Hudleston, F. G. H. Ewens, and Flying Officer R. S. Howe.

APPOINTMENTS.

The following appointments have taken effect as from the dates shown :—

AIR MARSHALS.—Sir John M. Steel, K.C.B., K.B.E., C.M.G., to Headquarters, Bomber Command, as Air Officer Commanding-in-Chief; Sir Hugh C. T. Dowding, K.C.B., C.M.G., to Headquarters, Fighter Command, as Air Officer Commanding-in-Chief; both to date 14th July, 1936.

AIR COMMODORES.—J. T. Babington, C.B.E., D.S.O., to Headquarters No. 24 (Training) Group, as Air Officer Commanding—10th July, 1936; G. R. Bromet, D.S.O., O.B.E., to Headquarters Coastal Command, as Senior Air Staff Officer—30th June, 1936; R. H. Peck, O.B.E., to Headquarters, Royal Air Force, India, as Senior Air Staff Officer—13th March, 1936; B. E. Sutton, D.S.O., O.B.E., M.C., to Headquarters, No. 22 (Army Co-operation) Group, as Air Officer Commanding—1st July, 1936.

GROUP CAPTAINS.—Sir Christopher J. Q. Brand, K.B.E., D.S.O., M.C., D.F.C., to Air Ministry, as Deputy Director of Repair and Maintenance—11th July, 1936; R. M. Field, to R.A.F. Station, Boscombe Down, in Command—29th May, 1936; R. H. Knowles, M.D., ChB., D.P.H., to R.A.F. Depot, Uxbridge, as Senior Medical Officer and Officer Commanding Hospital—9th July, 1936; J. Sowrey, A.F.C., to Headquarters, No. 6 (Auxiliary) Group, for Air Staff duties—8th June, 1936; Hon. L. J. E. Twisleton-Wykeham-Fiennes, to Headquarters, No. 2 Bomber Group, as Senior Air Staff Officer—2nd April, 1936.

The following appointments will take effect on the dates shown :—

AIR MARSHALS.—Sir Arthur M. Longmore, K.C.B., D.S.O., to be Commandant of the Imperial Defence College—1st September, 1936, vice Major-General R. H. Haining, D.S.O.; P. B. Joubert de la Ferté, C.B., C.M.G., D.S.O., to be Air Officer Commanding-in-Chief, Coastal Command—1st September, 1936, vice Air Marshal Longmore.

AIR COMMODORES.—A. W. Tedder, to be Air Officer Commanding, Royal Air Force, Far East, in October, 1936, vice Air Commodore S. W. Smith, O.B.E.; R. M. Hill, M.C., A.F.C., to Headquarters, British Forces in Palestine and Transjordan, in August, 1936, with a view to assuming command at a later date; S. J. Goble, C.B.E., D.S.O., D.S.C., Royal Australian Air Force, now Deputy Director of Operations at the Air Ministry, to be Air Officer Commanding, No. 2 (Bomber) Group in August, 1936.

RETIREMENTS.

The following retirements have taken effect from the dates shown :—

GROUP CAPTAINS. A. Corbett-Wilson at his own request—22nd April, 1936; H. A. Treadgold, C.B.E., M.D., B.S., M.R.C.S., M.R.C.P., on account of ill-health—1st July, 1936.

PERSONNEL.

R.A.F. STAFF COLLEGE.—The following officers have been selected for the 15th course at the R.A.F. Staff College, beginning January, 1937 :—

Squadron Leader R. L. Ragg, A.F.C.

Flight Lieutenants J. R. Adams, A.F.C.; R. L. R. Atcherley; G. R. Beamish; F. G. Cator; J. W. Colquhoun; H. I. Cozens; L. Dalton-Morris; I. J. Fitch;

F. J. Fressanges; C. R. Hancock, D.F.C.; C. M. Heard; F. S. Hodder; W. T. Holmes; R. B. Jordan; F. M. V. May; D. Macfadyen; G. F. Macpherson; T. N. McEvoy; A. H. Montgomery, M.B.E.; J. Norwood; M. D. Ommanney; W. A. Opie; W. F. Pharazyn; T. G. Pike; A. C. H. Sharp; J. E. R. Sowman (Stores Branch); W. G. S. Wood (Stores Branch); and Flying Officer F. C. Read (Stores Branch).

Officers who qualified at the 1936 examination but have not been selected for the 1937 course will be considered for the 1938 course.

PROMOTION TO FLIGHT LIEUTENANT.—Some time must elapse before the flow of officers from the large number of new entrants now being trained provides the number of officers at the Flight Lieutenant level which the expanded Service requires, and special measures are necessary in the interim period.

Extensions of service are being offered to selected officers, and a large number of permanent commissions have been offered to short service and medium service officers who are required to fill out the enlarged permanent cadre of the Air Force. Retired and reserve officers and ex-officers are being entered under civilian conditions of service for employment in administrative and specialist posts. The balance of requirements is being met by the employment of officers at an earlier stage of their careers than hitherto in flight commander and other posts of similar responsibility. In these circumstances, the Air Council have decided, as a wholly exceptional and temporary measure, to modify for a time the conditions of promotion to Flight Lieutenant in the general duties branch so as largely to reduce the number of flight commander posts filled by Flying Officers and at the same time to shorten the period during which a Flying Officer is required to carry higher responsibilities before he attains higher rank.

The period of Flying Officer service qualifying for time promotion to Flight Lieutenant will, therefore, be reduced to three years with effect from 1st April, 1936, and further reduced to two years with effect from 1st October next. The personnel eligible under para. 2 of A.M.O. A.186/34 for time promotion to Flight Lieutenant will be extended to include all short service officers of the general duties branch.

The rate of pay of Flight Lieutenants on promotion after less than four years service as Flying Officer will be 21s. 9d. per day. The hitherto normal minimum rate of 23s. 6d. per day will be issued on completion of four years service from the date of promotion to Flying Officer, subject to Promotion Examination B. having been passed. The increase to 25s. 4d. a day, normally given after two years in the rank of Flight Lieutenant, will not be given until two years from the date of qualification for the rate of 23s. 6d. a day.

The arrangements detailed in paras. 4 and 5 above will be purely temporary and will be reviewed by the Air Council at a later date.

REORGANIZATION OF HOME COMMANDS.

Consequent upon the expansion of the Royal Air Force, the Air Council have decided to carry out certain important changes with the object of providing an appropriate organization for the enlarged Force which will function with speed and efficiency in peace and in war. One primary feature of the new organization is that it makes the organization in peace conform as closely as possible with that visualized for war. As training and operations must be separated in war, it is essential that the peace organization should give effect to this separation as far as possible.

The new organization provides three operational commands and one training command, as follows :—

- (1) *Bomber Command*, which will control the bomber squadrons organized into a number of Groups.
- (2) *Fighter Command*, which will control the fighter squadrons, the Army co-operation squadrons, and the Observer Corps. There will be two Groups of regular fighter squadrons, an Army co-operation Group, and a Group for auxiliary fighter and auxiliary Army co-operation squadrons.
- (3) *Coastal Command*, which will control the flying-boat and general reconnaissance squadrons formed into two Groups. Certain training units have been retained under this Command and will form a separate Group. In addition, this Command will be responsible for the administration and shore training of the squadrons of the Fleet Air Arm.
- (4) *Training Command*, which will, with a few exceptions, control all the training units at home. The Groups under this Command will consist of one for Flying Training Establishments, one for Ground Training Establishments, and one Armament Group. The Superintendent of the Royal Air Force Reserve and Inspector of Civil Schools will also come under this Command.

The air defence of the country has hitherto been vested in the Air Defence of Great Britain Command and in the Coastal Command as hitherto constituted. The former of these Commands will disappear in its present form under the new organization, and the Coastal Command will be reorganized. The air defence of the country will then be vested in the three Operational Commands referred to above.

Close co-ordination between these is, of course, essential, and this co-ordination will be directly exercised, both in peace and in war, by the Air Ministry.

CHANGES IN TITLE.—As from 1st May, 1936, the following changes in title came into effect :—

<i>Old Title.</i>	<i>New Title.</i>
Inland Area	Training Command.
Coastal Area	Coastal Command.
Central Area	No. 1 (Bomber) Group.
Western Area	No. 3 (Bomber) Group.
No. 1 Air Defence Group	No. 6 (Auxiliary) Group.
Fighting Area	No. 11 (Fighter) Group.

HEADQUARTERS CHANGES.—In consequence of the reorganized command and administration in Home Commands, Headquarters, Air Defence of Great Britain, ceased to exist with effect from 13th July, 1936; Headquarters, Fighter Command formed at Stanmore on 14th July; Headquarters, Bomber Command, formed at Uxbridge on 14th July; and Headquarters, Training Command, completed the move from Stanmore to Market Drayton on 13th July, 1936.

In addition, the Royal Air Force Commands at Halton and Cranwell ceased to exist as independent commands with effect from 9th July, 1936. With the exception of the R.A.F. College, Cranwell, which remains directly under the Air Ministry, all units at Halton and Cranwell have been placed in the newly formed No. 24 (Training) Group of the Training Command.

NEW BOMBER GROUP.—No. 2 (Bomber) Group formed at Abingdon on 20th March, 1936, and was placed under the command of the A.O.C.-in-C., Air Defence

of Great Britain. This Group will take over executive command with effect from 1st August, 1936, and will comprise the following units:—

R.A.F. Station, Abbotsinch.	
No. 21 (B) Squadron.	
No. 34 (B) Squadron.	
R.A.F. Station, Turnhouse	} With effect from 4th August, 1936.
No. 83 (B) Squadron.	
R.A.F. Station, Hucknall.	} With effect from 21st August, 1936.
No. 98 (B) Squadron.	
No. 104 (B) Squadron.	

Nos. 21 and 34 (Bomber) Squadrons have moved from Bircham Newton to Abbotsinch. They will now be administered by the A.O.C., No. 2 (Bomber) Group.

NEW TRAINING GROUPS.—No. 24 (Training) Group formed at Halton on 10th July, 1936, and was placed in the Training Command on that date. This Group will comprise the following formations:—

Station Headquarters	.. .. .	Halton.
No. 1 School of Technical Training	.. .. .	Halton.
School of Cookery	.. .. .	Halton.
Princess Mary's Hospital	.. .. .	Halton.
Institute of Pathology and Tropical Medicine	.. .. .	Halton.
Medical Training Depot	.. .. .	Halton.
R.A.F. Depot	.. .. .	Uxbridge.
R.A.F. Officers' Hospital	.. .. .	Uxbridge.
Central Band	.. .. .	Uxbridge.
Station Headquarters	.. .. .	Manston.
No. 3 School of Technical Training	.. .. .	Manston.
Home Aircraft Depot	.. .. .	Henlow.
Electrical and Wireless School	.. .. .	Cranwell.
School of Store Accounting and Storekeeping	.. .. .	Cranwell.
R.A.F. Hospital	.. .. .	Cranwell.
Record Office	.. .. .	Ruislip.
Reception Depot	.. .. .	West Drayton.
School of Photography	.. .. .	South Farnborough.
Experimental Section, Royal Aircraft Establishment	.. .. .	South Farnborough.
Station Headquarters	.. .. .	South Farnborough.
No. 1 Stores Depot	.. .. .	Kidbrooke.
No. 2 Stores Depot	.. .. .	Altrincham.
No. 3 Stores Depot	.. .. .	Milton.
No. 4 Stores Depot	.. .. .	Ruislip.
Central Medical Establishment	.. .. .	London.
Air Ministry W/T Section	.. .. .	London.
Inspector of Recruiting	.. .. .	London.
Aeroplane and Armament Experimental Establishment	.. .. .	Martlesham.

No. 1 Flying Training School was placed in No. 23 (Training) Group with effect from 10th July, 1936.

The School of Air Navigation, together with No. 48 (General Reconnaissance) Squadron were also placed in No. 23 (Training) Group with effect from the same date.

The Superintendent of the R.A.F. Reserve has been renamed "Superintendent

of the Reserve and Inspector of Civil Flying Training Schools" and placed in the Training Command with effect from 1st June, 1936.

ARMAMENT GROUP.—With effect from 10th July, 1936, the Armament Group comprises the following units:—

- Air Armament School.
- No. 1 Armament Training Camp.
- No. 2 Armament Training Camp.
- No. 3 Armament Training Camp.
- Temporary Armament Training Camp, Aldergrove.
- " " " " Tentsmuir.
- R.A.F. Station, North Coates Fitties.
- Air Observers' School.

GENERAL.

UNIT BADGES.—With a view to fostering *esprit de corps* in the Royal Air Force, the Air Council have recently authorized the adoption of badges by units of the Air Force for display on the unit's aircraft and other equipment suitable for the purpose. The Chester Herald has been appointed Inspector of Royal Air Force Badges and he will ensure that badges designed in collaboration with the units are in general accordance with the principles of heraldry.

His Majesty the King has graciously consented to the submission to him of all badges proposed to be adopted.

EMPIRE AIR DAY, 1936.—Empire Air Day was celebrated on 23rd May, 1936, by the opening of forty-five service stations to the public, on payment of a small admission charge. The general organization was undertaken by the Air League of the British Empire, and the local organization of stations by the station commanders.

Despite rather unfavourable weather, there were approximately 214,000 visitors to the stations, showing an increase of some 66,000 on the total attendance for 1935. A sum of over £7,500 will be handed over to R.A.F. charities.

ROYAL AIR FORCE DISPLAY, 1936.—The seventeenth Royal Air Force display was held at Hendon on Saturday, 27th June, 1936. Approximately 150,000 people were present. Owing to Court mourning, no member of the Royal family attended.

FLEET AIR ARM

REORGANIZATION OF CATAPULT UNITS.—With effect from 15th July, 1936, the aircraft of the Fleet Air Arm carried in capital ships and cruisers will be reorganized as follows:—

Aircraft carried in ships of the 1st Battle Squadron will become No. 701 (Catapult) Flight.

Aircraft carried in ships of the 2nd Battle Squadron will become No. 702 (Catapult) Flight.

Aircraft carried in ships of the Battle Cruiser Squadron will become No. 705 (Catapult) Flight.

Aircraft carried in ships of the 1st Cruiser Squadron will become No. 711 (Catapult) Flight.

Aircraft carried in ships of the 2nd Cruiser Squadron will become No. 712 (Catapult) Squadron.

Aircraft carried in ships of the 3rd Cruiser Squadron will become No. 713 (Catapult) Flight.

Aircraft carried in ships of the 4th Cruiser Squadron will become No. 714 (Catapult) Flight.

Aircraft carried in ships of the 5th Cruiser Squadron will become No. 715 (Catapult) Squadron.

Aircraft carried in ships of the 6th Cruiser Squadron will become No. 716 (Catapult) Flight.

Aircraft carried in ships of the 8th Cruiser Squadron will become No. 718 (Catapult) Squadron.

Aircraft carried in ships of the New Zealand Division will become No. 720 (Catapult) Flight.

It is essential that the R.A.F. organization of the aircraft should be coincident with the naval organization of H.M. ships. Consequently, when a ship is transferred from one naval formation to another, the transfer of the aircraft, personnel, and maintenance stores to the appropriate flight or squadron will be carried out automatically and without further instructions from the Air Ministry.

When a ship belonging to a foreign station returns to home waters for any purpose and is not transferred or attached to a naval squadron in home waters, the aircraft and personnel will be regarded as detached from their flight or squadron to the R.A.F. Station, Mount Batten, or to the R.A.F. Station, Lee-on-Solent, as ordered by the A.O.C. Coastal Command. The A.O.C. Coastal Command will assume full administrative and maintenance responsibility whilst the ship remains in home waters or whilst the aircraft remain shorebased.

In the event of a naval squadron being transferred from one command to another (e.g., from Home Fleet to Mediterranean Fleet), the whole R.A.F. flight or squadron concerned will be automatically transferred to the appropriate R.A.F. command.

AUXILIARY AIR FORCE

VISCOUNT SWINTON APPOINTED HONORARY AIR COMMODORE.—H.M. the King has approved of the appointment of the Right Hon. Viscount Swinton, G.B.E., M.C., Secretary of State for Air, as Honorary Air Commodore of No. 608 (North Riding) (Bomber) Squadron, Auxiliary Air Force.

No. 608 (North Riding) (Bomber) Squadron is stationed at Thornaby near Middlesbrough.

NEW SQUADRONS.—The following cadre squadrons were converted to Auxiliary Air Force squadrons on the dates stated:—

No. 500 (County of Kent) (Bomber) Squadron, Manston—25th May, 1936.

No. 503 (County of Lincoln) (Bomber) Squadron, Waddington—1st May, 1936.

No. 504 (County of Nottingham) (Bomber) Squadron, Hucknall—18th May, 1936.

No. 501 (City of Bristol) (Bomber) Squadron has been renamed No. 501 (County of Gloucester) (Bomber) Squadron and converted to an Auxiliary Air Force squadron with effect from 1st May, 1936.

No. 502 (Ulster) (Bomber) Squadron was placed in No. 6 (Auxiliary) Group with effect from 10th July, 1936.

R.A.F. VOLUNTEER RESERVE

H.M. the King has approved the creation of a new reserve, called the R.A.F. Volunteer Reserve, which will be open only to men in civil life. The Reserve will embrace pilots and other classes; the organization of the pilots' section is being proceeded with at once as it is most urgent.

The number of pilots required annually for the Volunteer Reserve will be 800, as compared with 60 from civil life before the expansion of the Royal Air Force began. They will receive their flying training at "aerodrome centres" which will be established in the vicinity of important towns and areas with a large population. Ground instruction will be provided at "town centres" at which lectures on the theory of flight, airmanship, and other essential subjects will be given. The lectures will be arranged mainly during winter evenings when opportunities for flying are necessarily restricted.

The "aerodrome centres" will be organized on similar lines to the existing Civil Flying Schools at which reserve flying training and the initial training of pilots for the regular Air Force is at present carried out. They will be operated by firms under contract with the Air Ministry.

Volunteer pilots will be recruited from the neighbourhood of aerodrome centres, entry being confined to candidates between the age limits of 18 and 25. The minimum period of service will be five years. Previous flying experience is unnecessary, but candidates should have had an education up to the standard of the School Certificate. They will be entered as airman pilots with opportunities later for promotion, on merit, to commissioned rank.

The flying instruction will be arranged to allow pilots to train at week-ends, in the evenings, and at other times convenient to them. They will be encouraged to spend as much time as possible in the air in order to gain flying experience of value to the Service. In addition, volunteers will have to attend an annual flying course of fifteen days duration.

In the first instance they will be trained on elementary types of light aircraft and, later, on service types. This instruction should enable volunteer pilots to operate in service squadrons in an emergency.

The Reserve pilots will receive a retaining fee of £25 a year and appropriate allowances while under training.

Arrangements are being made for the scheme to come into effective operation early in 1937, but in view of the administrative work still to be undertaken applications are *not* desired from candidates until after details have been announced regarding the location of aerodrome centres later during the present year.

The new Reserve will also provide facilities for men who can arrange to devote a continuous period of eight to ten weeks for their initial instruction during their first six months of Reserve service. For this particular section applications are invited *immediately* and should be made to The Secretary, Air Ministry (S.7.c.), Kingsway, W.C.2. The same age limits will apply and the conditions of service will be generally similar to those announced above.

Present members of the Royal Air Force Reserve who entered from civil life will be afforded the opportunity of transferring to the new Reserve.

CIVIL AVIATION

TRANSATLANTIC AIR SERVICE.

In reply to a question in the House of Commons, Sir Philip Sassoon, Under Secretary of State for Air, gave particulars of the projected Transatlantic Air Service. The chief points are as follows.

As the result of discussions between representatives of the United Kingdom, Canada, the Irish Free State, and Newfoundland, arrangements have been agreed upon, with the approval of the Governments concerned, to enable survey flights to be undertaken and an experimental air mail to be established as soon as possible. These will be followed eventually by a mail and passenger service on a minimum schedule of two flights a week in each direction.

The main details of the arrangements agreed between the respective Governments are as follows :—

A Joint Operating Company which will be responsible for carrying on the services will be incorporated at the instance of three Companies, of which one will be nominated for that purpose by the Government of the United Kingdom, one by the Irish Free State Government, and one by the Canadian Government. The Company nominated by the United Kingdom Government will be Imperial Airways Limited. The Board of Directors of the Joint Company, will be nine in number of whom three, including the Chairman and Managing Director, will be nominated by the United Kingdom Company, three by the Canadian Company, and three by the Irish Free State Company. The capital of the Joint Company will be subscribed and held as to 51 per cent. by the United Kingdom Company, 24½ per cent. by the Canadian Company, and 24½ per cent. by the Irish Free State Company.

In return for landing facilities to be granted to the Joint Company by the United States Government, Pan American Airways will be granted landing facilities by the Governments of the United Kingdom, Canada, the Irish Free State and Newfoundland; and that Company will participate on a basis of reciprocity with the Joint Company in the operation of the services.

In the operation of the services all practical preference will be given to the direct route from this country via the Irish Free State, Newfoundland and Canada, but it may be necessary during an initial period to operate the services via Bermuda during the winter months.

Experimental long-distance flights and other necessary investigations will be carried out in the near future by Imperial Airways. The results of the experimental flights and investigations will be placed at the disposal of the Joint Company when it is established. It is understood that Pan American Airways will also be conducting experimental flights.

Of the total annual subsidy required Canada will contribute 20 per cent. subject to a maximum of £75,000, the Irish Free State 5 per cent. subject to a maximum of £12,000, and Newfoundland a sum to be agreed between that Government and the United Kingdom Government: the remainder will be made up by the United Kingdom Government.

Each of the four Governments concerned has undertaken to arrange for the provision of the necessary airport, radio, and meteorological facilities for the transatlantic service.

OVERSEAS COMMANDS

RECONNAISSANCE FLIGHT.

SINGAPORE TO SYDNEY.—With a view to determining the suitability of the coastal route from Darwin to Sydney which it is proposed to follow in the accelerated Imperial Airways Air Mail service to Australia, a survey flight was carried out by a Singapore III flying boat of No. 205 (F.B.) Squadron, Singapore. Representatives of the Royal Australian Air Force, Imperial Airways, and Quantas Airways took part in the reconnaissance.

The flight commenced from Singapore on 7th May, calls being made at Klabat Bay, Surabaya and Kupang *en route* to Darwin, where the flying boat arrived on the 13th. From Darwin the flying boat proceeded to Roper river on the East side of the Gulf of Carpentaria, where two sites were surveyed. Another possible site was found in the uninhabited Vanderline island in the Sir E. Pellew group to the S.E. of Roper river. After surveying Mornington island and Norman river on the S.E. of the Gulf, the flight was continued to Karumba (Kimberley), close by. The flying boat then flew across Northern Queensland to Cardwell where a further site was examined. It then proceeded down the coast to Sydney, via Bowen and Brisbane, many sites being examined *en route*. Sydney was reached on 25th May.

MIDDLE EAST

The constant tension between Arab and Jewish members of the community was brought to a head on 15th April by an incident which, although devoid of political motive, was nevertheless the signal for the commencement of serious rioting in Palestine. This incident, which marked the beginning of disorder, arose out of a case of banditry in the Tulkarm area in which one Jew was killed and two wounded by Arab robbers.

Retaliation by Jews led to further disturbances in other areas particularly at Jaffa and Tel Aviv. A general strike was called by the Palestine Arab party on 21st April, since when there has been no appreciable change in the situation. Cases of murder, sabotage, arson and destruction of crops and plantations continue to be reported over a widespread area.

The Palestine garrison has been reinforced by additional land forces from Egypt and Iraq for the purpose of guarding essential communications and to assist the police in dealing with disturbances. Since the middle of June, escorts to convoys have included wireless lorries for the purpose of transmitting emergency calls for assistance. The arrangement has been very successful, enabling aircraft to answer calls with promptitude and to co-operate with the land forces in engaging bandits and inflicting casualties.

It was decided towards the end of June to resort to low bombing against armed bands in open country, which were interfering with normal activities and impeding the operations of the Security Forces by sniping.

FOREIGN

FRANCE

"SACRIFICE SQUADS."—Two of a series of "sacrifice squads" composed of parachutists, whose task in wartime will be to drop behind the enemy lines to organize the bombing of vital objects, such as munition factories and important strategic points, have been added to the French Air Force. It seems that the formation of these squads has led the authorities to examine methods of utilizing large aircraft to drop the personnel of these squads in enemy territory. One squad of these "Parachutist Chasseurs" is stationed at Chartres and the other at Algiers, whilst three more squads are in the process of formation. The period of enlistment for this service is of five years duration, and the pay received amounts to a minimum of approx. £26 per month—which is greatly in excess of the normal rate of pay of the French private. Each squad is divided into two sections, with an establishment of ten privates, two corporals, and a sergeant.

BREGUET GYRO-PLANE.—The aircraft constructor Louis Breguet, who is a candidate for the French Academy of Sciences, has submitted to the latter a treatise on helicopters. Breguet, who for many years has occupied himself theoretically and practically with this problem, declares, that this particular type of aircraft is capable of covering distances up to 3,730 miles at over 300 m.p.h. These performances are said to be possible with engines and useful loads such as are feasible with modern twin-engined transport planes; the cruising speed of the latter was, however, only 225 m.p.h.

MULTI-SEATER FIGHTERS FOR JAPAN.—Following the visit last summer of a Japanese Military Aviation Commission under General Ito, the Japanese Government has bought the licence for the twin-engined multi-seat fighter Breguet-460 M. The first aircraft of the series destined for Japan commenced test flights at the end of April, 1936. It has various modifications compared with the experimental model brought out at the beginning of 1935. Equipped with two air-cooled 14-cylinder Gnome K14 engines of 930 h.p. at 14,870 feet, it is said to have a maximum speed of more than 242 m.p.h.

FIGHTER-LEADER AIRCRAFT.—The Potez Company has recently introduced a new twin-engined prototype known as the Potez-63, designed for use as a "Fighter-leader" aircraft. It is a derivative of the De Havilland "Comet," and is equipped with two Hispano-Suiza 14 HB engines of 670 h.p. each; it has accommodation for a crew of three. No details of performance are available, but it is said that the aircraft, which can be used for a number of purposes, will equal modern single-seater fighter aircraft in speed. The normal purpose of this aircraft is as the title indicates.

NEW "BLERIOT" FIGHTER AIRCRAFT.—The "Bleriot" aircraft works near Paris is nearing the completion of a new single-seater fighter, the "Bleriot-710." It is stated to be an improved version of the "Bleriot-Spad 510," of which sixty were ordered by the Government for inclusion in the re-equipment programme of the French Air Force. Although details of the "710" are not yet available, it is understood that performance figures will be greatly in advance of the "510."

DIVE TESTS OF FIGHTER AIRCRAFT.—It is reported in the Press that the acceptance tests imposed by the French Air Ministry on single-seater fighters include dive tests. The speed of the dive in this connection must exceed by 30 per cent. the maximum horizontal speed of the aircraft—that is, a speed of 130 per cent. The results of certain tests imposed are given below:—

Type.	Max. Speed in Level Flight.	Percentage accredited on Test.
Dewoitine D.373	236 m.p.h.	137 per cent.
Dewoitine D.503	230 "	142 "
Nieuport 161	274 "	148 "
Morane-Saulnier 405	298 "	153 "

THE FRENCH TRIPLE-PURPOSE AIRCRAFT—"AMIOT 144."—This aircraft, which is adapted for use either for Bomber, Fighter, or Reconnaissance duties, is an improvement on the "Amiot 143." Fitted with a retractable undercarriage and two Gnome K.14 engines, it is reported to have a maximum speed of 217 m.p.h. and a range of 1,240 miles. It is intended to replace the Gnome with a new type of Hispano-Suiza engines, when it is estimated that the speed will be increased to 240 m.p.h. at 13,000 feet.

GERMANY

DEATH OF GENERAL WEVER.—Lieutenant-General Wever, the Chief of the Air Staff of the German Air Force, was killed in an accident at Dresden on 3rd June. General Wever was flying himself in a Heinkel 70, and the accident occurred just after taking off. It is understood to have been due to a failure to unlock a portion of the controls which had been locked on the ground. General Wever was 49 years old, and a man of outstanding ability and untiring energy. He was principally responsible for the organization of the Air Force, and constantly visited the stations by air. He flew practically every day before going to his office, having only learnt to fly within the last two years or so.

ITALY

THE ITALO-ABYSSINIAN WAR.—Italian military circles have recently stressed the decisive role played by the Italian Air Force in the campaign in East Africa. The Air Force, throughout the seven months of fighting in East Africa, had the following tasks :—

- (a) Reconnoitring country that was either partly or completely unknown, to facilitate the High Command's task in the conduct of operations ;
- (b) Pursuit of Abyssinian bodies of troops ;
- (c) Avoiding surprise attacks ;
- (d) Breaking the resistance of the enemy by bombing raids at the beginning of actions ;
- (e) Harassing enemy reinforcements ;
- (f) Bombing and machine-gun attacks near the ground ;
- (g) Continued harassing of enemy forces to prevent their reforming ;
- (h) Supplying troops with foodstuffs and ammunitions ;
- (i) Liaison service between Italian units ;
- (j) Breaking the morale of the enemy by dropping leaflets with messages from G.H.Q.

The Air Forces in East Africa consist of Brigades, Attack units, Flights and Squadrons of the various Specialist formations under the control of Divisional General Mario Ajmone Cat. The southern part of the country is under the command of Brigadier General Ferruccio Ranza.

No mention, however, is made by the Italians of the use of gas which appears to have played an important part in breaking down the morale of the Ethiopians. Gas is said to have been sprayed from aircraft and to have caused heavy casualties amongst the natives who had no means of combating a form of attack which was completely beyond their understanding.

The following extract from *Rivista Aeronautica* of April, 1936, is of interest :—
“ The main factor of decisive importance in winning the war, which had the greatest moral effect on the enemy and which proved the most effective, was ‘ Pursuit.’ Faced with the impossibility of pursuing an enemy in flight with sufficient speed with a modern army and modern armaments, the Air Arm rendered untold services which increased the value of the results obtained. This importance was stressed in the communiqués from G.H.Q. East Africa, particularly in regard to the magnificent victory of Amba Aradam and in respect of the brilliant advance towards the South which even made it possible to scale the ramparts of Amba Alagi. The actual advance, which proceeded without encountering any resistance, was the result of the defeat at Amba Aradam and of the subsequent air pursuit.”

In Marshal Badoglio's report to the Duce on the second battle of Tembien and the battle of Soire (27th February-3rd March, 1936) the fundamental plan of "not giving the enemy, who was already shaken, any respite, and to continue attacking him unrelentingly and with every means available until the Italian offensive had annihilated him" was, translated into action, as follows:—"To the Air Arm I entrusted the task, which the ground forces could no longer carry out, of pursuing to the utmost the enemy columns fleeing in disorder from the vast battlefield of Enderta, until they had been scattered and annihilated. Events have proved how this task was carried out in the most complete way, contributing that essential factor to the great success of the Italian Armies."

Another important role of the Italian Air Force during the operations was dropping supplies from the air. These included troops' rations, forage for animals, ammunition, water, and even live animals. In one instance the Italians claim to have dropped 123 tons of food for advance troops between the 7th and 19th April. The following was the method adopted as described by a German who was recently in Ethiopia: "The aeroplanes took up the material to be forwarded in two different ways, either in ordinary parachute-bags of 30 or 50 kg., or in the so-called *Aero-Rifornimenti* which are metal torpedoes of about 1.20 metre in length, in which everything imaginable can be packed as in a trunk—munitions, machine-gun parts, bread and tinned provisions, sealed-up water, etc. The parachute attached to this torpedo is calculated to take 200 kg. On the underside of the torpedo are four metal legs which take up the shock. In this manner the supply could be accomplished by air without much loss of material.

Naturally the troops very quickly accustomed themselves to co-operation with the aeroplanes. By means of cloths spread out in code patterns their requirements were notified, and the direction of the wind was given by means of ground-fires. The land North of the line from Lake Tana to Dessye made the use of parachutes much easier, as it is mostly open country, whereas in regions of tropical forest their use would meet many difficulties."

STATISTICS OF AIR FORCE ACTIVITY.—The following statistics have been published of the activities of the Italian Air Force between 3rd October, 1935 (start of hostilities), and 5th May, 1936 (occupation of Addis Ababa):—

Hours flown—35,000.

Explosives dropped—1,500 tons.

M.G. cartridges fired—260,000.

Bombing attacks—872.

M.G. attacks—178.

Attack and reconnaissance flights—454.

Long range reconnaissance flights—830.

Near reconnaissances flights—2,149.

Hours flown for air photography—300.

Supplies dropped by parachute to Italian troops, necessitating average flights of 310 miles (300 km.)—1,000 tons.

Advanced points of support supplied with fuel, stores and shelters—4,503.85 tons of material was carried by air for this specific purpose.

86 Pilots, specialists, and men lost their lives; about 150 men belonging to the Air Force were wounded and invalided.

The construction of airports required the use of 16,000 automobiles; these covered about 1,860,000 miles (3,000,000 km.) and carried 75,000 tons.

THE AIR FORCE AND SEA COMMUNICATIONS.—In an article under the title of "The Air Arm and the Naval Arm" which appeared recently in the newspaper *Giornale d'Italia*, the writer seeks to enhance the value of the Italian navy and to dispute the claim that the Air Force alone can sweep the seas of hostile warships. He states that Italy cannot carry out a successful offensive without freedom for sea communications. He argues the *pros* and *cons* of offence and defence when air forces attack warships, and concludes that the results of such attacks are doubtful. He finally says that newspaper articles continually overstate the power of an air force and lower the faith in the navy which is an essential part of Italy's security. The article is of interest because, in a controlled Press, it throws doubt on the value of an air attack against warships, whereas Press propaganda in Italy has led the people to believe that Italian air power could sweep the Mediterranean of hostile ships.

SOVIET UNION

ACTIVITIES IN CZECHOSLOVAKIA.—The German *Ost Express* news agency has published the following summary of an article which appeared in a Polish journal :— "The Polish paper *Ilustrowany Kurjer Codzienny* publishes an article in which the repeatedly reported fact is brought out that Czechoslovakia will serve as an operational base for the Red Army. The views of the Polish journal are accompanied by a number of particulars such as names, ranks and formations, as well as the location of the various Red Army officers who are at present in Czechoslovakia. In May, 1936, alone, forty-eight Red Army officers are reported to have arrived in Maehrisch-Ostrau and Nitra, of which four have been attached to the Prague Military School while the remainder have joined air force and signal units. The journal further states that a big espionage organization has been created in Czechoslovakia, the activities of which also embrace Poland.

"The Polish journal further establishes that the operational basis in Czechoslovakia serves Soviet Russia in two directions :—

- (a) as an exponent of Soviet armament and the Russian expansion which is not only directed against Germany, but also against Poland ;
- (b) as a powerful organization for the activities of the Comintern in Poland, Rumania, Hungary, Yugoslavia, Austria and also partly in Germany.

"One must ask what aims are being pursued by Czechoslovakia, as, in connection with these uncontested facts, a marked increase of Communist propaganda is visible, particularly in the Czechoslovakian Army. The Czechoslovakian public are being told by their official circles that the liaison with the Red Army officers is being carried out, as it were, at the wish of France. The French General, Svisgut, has ostensibly given the Minister of Defence to understand that the French General Staff would like to see officers of the Red Army being employed as inspectors in the Air Force units of the Czechoslovakian army."

The Soviet Press has published some caustic articles and cartoons ridiculing this Polish publication.

REVIEWS OF BOOKS

GENERAL

General Smuts. By Sarah Gertrude Millin. (Faber & Faber, Ltd.). 2 Volumes, 18s. each.

These two volumes present a unique portrait of individual development. They show us a simple Cape farmer's son who, although he did not learn to read and write until the age of twelve, won a scholarship and achieved fame at Cambridge. Called to the Bar at twenty-five, three years later he renounced his British nationality and became the Attorney-General of the South African Republic. A lawyer with no previous military experience, he won fame as a brilliant guerilla leader in the South African War. Notwithstanding his two and a half years of gallant resistance in the field, he recognised the *bona fides* of Great Britain's offer of self-government to the Dutch Republics, and he wholeheartedly co-operated with his former enemies. He became a Minister of the Crown, first in the Transvaal Colony and later Minister of Defence for the new Commonwealth of South Africa. Only twelve years after the Treaty of Vereeniging, when imminent danger threatened the whole community, he proved a most loyal defender of the British Empire, and throughout the Great War he served in many and varied capacities: as a Commandant in the suppression of the rising of the malcontents in British South Africa; as second-in-command in the conquest of German West Africa; as Commander-in-Chief in German East Africa; and, in the last two years, as a member of the Imperial War Cabinet in London. During the eighteen years since the War, he has remained a Dominion statesman, ever steadfast in his ideals and in his loyalty.

Loyalty was, indeed, ingrained in him, and in his early days, up to the unhappy Jameson Raid, he saw no conflict between loyalty to his own Dutch community in South Africa and allegiance to the British Crown. Neither the Governor of Cape Colony nor the British Government had any previous knowledge of that ill-starred and hopelessly executed project, but Rhodes himself cannot be so acquitted, and Rhodes was Prime Minister of the Cape and in the minds of not a few Cape Dutchmen had come to represent England. Smuts was one of these. With vehement youthful indignation he cast aside his British citizenship, forsook his home and became a second-class burgher in the Transvaal Republic.

Miss Millin sets forth with clarity and generally with fairness Smuts' almost immediate appointment as Attorney-General of the Transvaal and subsequent strenuous pleading of that Republic's claims, especially at the Bloemfontein Conference in 1899, though on a few points her narrative is not absolutely accurate. It is not true to assert, as she does (Vol. I, p. 96), that Sir A. Milner was personally anxious to bring about war with the Transvaal; it is inaccurate to suggest that the Boers did not begin to order arms seriously from Germany until after the breakdown of the Bloemfontein Conference (p. 99); yet she records quite truly that throughout the Conference General Smuts did his utmost to combat Kruger's stubborn refusal to grant political rights to the Uitlanders, who, by their enterprise and energy had converted the Transvaal from a bankrupt state into a rich community.

The rough times of the South African War gave Smuts "the greatest happiness of his life," (Vol. I, p. 146), "the most perfect satisfaction" (Vol. I, p. 119). To keep his intellect alert a Greek Testament and Kant's *Critique of Pure Reason*

were carried in his saddlebags. But the hardships endured in the Cape Colony with his small force of but three hundred burghers during the last year of the war weighed but little with him compared with the joy of an independent command. The Treaty of Vereeniging terminated that satisfaction, and for nearly four years Smuts' political foresight as to the future of South Africa was dimmed by the Chinese labour question and other political stumbling-blocks. Even as late as the 5th April, 1904, he wrote to Miss Hobhouse, "I see no ray of light in the future" (Vol. I, p. 201); but eighteen months later his lack of faith was finally removed by the definite grant of responsible government to the Transvaal and Orange River Colonies. In a flash his youthful vision of a free community of English and Dutch, controlling and developing the whole sub-continent South of the Zambesi, revived, and he devoted heart and soul to the consummation of a self-governing Dominion under the British flag. Into that task he threw his whole energies, first as Attorney-General of the Transvaal under Lord Selborne as Governor of that Colony and High Commissioner of South Africa, with General Botha as Prime Minister, and, a year or two later when all four British Colonies were united, as Minister of Defence for the Dominion of South Africa.

The local atmosphere had still its storm clouds, for not a few Dutchmen were slow to grasp the reality of their political freedom, but Smuts' and Botha's steadfast loyalty at the outbreak of the Great War quickly dispelled the worst of these clouds—the Beyer, De Wet and De La Rey rebellion. The internal tranquility of British South Africa having thus been assured, two campaigns against Germany's colonies followed. In the first of these Smuts served as Botha's second in command. Complete success—"the first allied success of the war" as Miss Millin terms it—was attained by a force raised and maintained entirely by the Government of the Dominion of South Africa. In the second campaign a force of most varied nationalities and colour was concentrated and maintained by the Home Government. Sir Horace Smith-Dorrien had originally been appointed as its Commander-in-Chief, but pneumonia had prevented his taking up that command. Smuts was then selected in his place, with the rank of Lieutenant-General in the British Army. It was a difficult campaign as the enemy adopted guerilla tactics that Smuts himself had practised so skilfully in Cape Colony some fourteen years earlier. The bitter was bitten, but nevertheless he attained practically complete control, as he himself had formerly been controlled.

This was the last of Smuts' active commands in the field. In March 1917 he was summoned to England as South Africa's representative at an "Imperial War Conference," and three months later made—on Mr. Lloyd George's nomination—a member of that War Cabinet on which had been laid the supreme responsibility of supervising the strategic direction of the land, sea, and air forces of the Empire. The other members of this body were Mr. Lloyd George himself, Mr. Balfour, Mr. Bonar Law and Mr. McKenna. Of all these members, including Lord Milner who was added later, Smuts was the only one with any military experience or knowledge whatever, and his experience was very different from the situation with which our armies in Europe and Asia were faced. Nevertheless he continued till the armistice the only non-civilian member of this cabinet, his responsibilities including personal visits to the main theatres of war, as well as to Egypt. Miss Millin's record of the views expressed by Smuts during the last two years of the War make her second volume of special interest to the many who cannot but realise the danger of entrusting the higher direction of a world-wide war to a body of men very inadequately equipped in experience and knowledge for so vital a task. It is, however, a notable defect in the author's narrative that, in the passages dealing with the

main theatre of war, the value of Lord Haig's leadership seems to be very imperfectly appreciated, while the entire credit for the allies' success in the last five months is attributed to Foch.

Yet as a whole these two volumes set forth lucidly and in a most interesting fashion the evolution of a great man, and incidentally emphasize the value of the principles on which the British Empire has been built and on which its future depends.

Lord Kitchener. By Arthur Hodges. (Thornton Butterworth Ltd.). 15s.

This is a detailed and sympathetic study of a great Englishman, wherein the forgotten controversies which centred round his career are treated with appropriate moderation.

The achievements of Gordon, Kitchener, Wingate, and Slatin read like a romance; the wizards are British statesmen, dispatching solitary knights into the Paynim wilderness, without cloaks of invisibility, and with no armour but luck. Even that "old war horse" (p. 72) Sir Evelyn Wood, coolly ordered Kitchener to hostile Berber, with the sole proviso that if there was "imminent risk," he need not venture. The risk was indeed imminent, but Kitchener accepted it as all in the day's work.

Six years unremitting toil had their fruit when he faced the Dervishes at Omdurman; even then he offered the Khalifa terms (p. 109). Perhaps none dared to carry the letter; the armies met, the Dervishes were routed, the Mahdi's tomb blown to pieces, and his bones scattered abroad—a deed of ill omen to the superstitious. This victory seemed to open the vision of a great union of Egypt, Arabia, and North Africa, with himself as Viceroy (p. 96) "vast dreams never to be realised." Must history reckon Rhodes and Kitchener the last great Imperialists?

The author clearly describes Kitchener's gigantic task in South Africa; its accomplishment notable for two decisive measures—the Block-House System and its accompanying devastation, and the Concentration Camps. No commander less self-reliant would have persisted in these against such a storm of abuse, calumny and ridicule. Yet he made no enemies among the Boers themselves; they came to feel for him "a reluctant admiration and trust." (p. 151). Milner alone could not have achieved the Vereeniging settlement; it was due to Kitchener's tact and sympathy, and his hint that a Liberal government would soon grant "self-government."¹

Where the author discusses the origins of the Great War, and the methods of its conduct and direction, he is not so happy. He adopts the German view of Sir Edward Grey, and seems to hold that the military 'entente' was fatal. Prudence might well have reserved Great Britain's own strategic 'initiative'; but to use it to base an Expeditionary Force on Antwerp (p. 225) must have necessitated yet another 'entente'—with Holland. In any case, Kitchener was the last man to have agreed with Balfour (p. 222) that "no British interest was involved." Some rhetorical exaggerations from the "World Crisis," are here quoted. Thus on the Somme, the High Command—"for every two Germans killed . . . were killing three Englishmen" (p. 253); an estimate founded on a misreading of casualty lists, long since exposed. The author charges the High Command with lack of "imaginative conceptions" (p. 253); yet appreciates Joffre's sardonic comment—"Bonaparte, ah yes, he would have thought of something." (p. 239).

His review of the "munitions scandal" is penetrating. Kitchener remained

¹ Cf. *General Smuts* by Mrs. Millin.

"calm and unruffled," having all the time in his possession "a document," here cited (p. 276), "which could have confounded his enemies"—and which, generously he forbore to use.

Of several vivid word-pictures, painted in the now familiar manner of Dr. Ludwig or Mr. Guedalla, the best is of London, all unheeding, on the verge of war. "It is still the same . . . but England of the days before the War has gone, never to return." Doubtless, through those years of trial, the heroic spirit of Kitchener helped to purge it of much that, happily, will never return.

This biography can be particularly recommended to young officers.

Vital Peace. By Henry Wickham Steed. (Constable). 10s.

Mr. Wickham Steed has given a good many years of thought to his subject, and can confidently be recommended as a guide through the world-wide jungle of verbiage, sentiment, and loose thinking that surrounds the vital problem of organizing peace.

He commences by marshalling the arguments put forward by pacifists and non-pacifists, and submitting them to a fair and impartial analysis. He then goes on to review the various attempts that have been made to prevent war, with special reference to the League and the post-War period. This is the more interesting as he is able to speak from personal experience of, and intimate contact with, many of the principal actors in the drama. He attributes the failure of these attempts primarily to the unwillingness of governments and peoples to face up to facts. Security must precede disarmament (Shades of the Disarmament Conference!): the Covenant and the Kellogg Pact between them, he maintains, contain adequate guarantees of security, provided the signatory nations are willing to implement their signature. But the obligations implied in these instruments are far from being generally recognized. The renunciation of war has as a corollary the renunciation of neutrality *vis-à-vis* an aggressor. This, in its turn, involves the surrender of national sovereignty to an extent that few people appreciate. We have not yet reached that point, or anything like it; and it is as well to recognise the facts.

In his chapter "The Enemy," he deals with the philosophical ideas underlying the various forms of dictatorial government in the world to-day, and points out that they are self-confessed enemies of the organization of peace on a basis of freedom.

Finally, he makes clear the distinction between the state of affairs in the world to-day and the noble ideal of vital and constructive peace. He points out that the pursuit of the latter is beset by hardship, difficulty, and risk: few will disagree with him or remain under an illusion as to the likelihood of its imminent realisation, or as to the dangers of the present international situation.

Fifty Years with John Company. By Ursula Low. (John Murray). 15s.

The book concerns the career of General Sir John Low and sundry kinsmen, the most important of whom was Sir Richmond Shakespear, between the years 1805 and 1858. Unfortunately there is but little account of his period as a soldier which terminated in 1818 on his entering the Political Service, although he took part in the conquest of Java in 1811 and was at the bloody battle of Mehidpore in 1817. For many, the book bears too great a resemblance to a family history pure and simple, with heavy Scotch humour interlarded. There is, on the other hand, much of interest and value even to those who know their India well, and the accuracy is undoubted.

We learn of the autocratic positions held by captains of East Indianmen who

could charge as high as £250 for a passage with a seat at their table—and even the highest had to bow down before them; of the appalling isolation of Political Officers with minor native courts; of the lifelong separations between parents and children brought about by the length of stay of the former in India; and of the slowness of communications. Low, when appointed Resident at Bithur, near Cawnpore, in 1818, preferred to go round from Poona by sea, and then from Calcutta by river—a six months' trip, rather than face the direct route with the country in an upheaval. The habits of Europeans in regard to mausoleums are exemplified by it being a pastime to fire pistols in the Taj to hear the echo, and to import pianos and musical instruments.

Low's most important post was Resident at Lucknow, where he remained for eleven years. The corruption, debauchery, and utter worthlessness of the Kings of Oudh fully justified their removal in 1855. There is an excellent account of Low's handling of the Padshah Begum's attempt to place a boy protégé on the throne in 1837, when a low-class British adventurer officer in the State service actually had the effrontery to salute the lad as king. Richmond Shakespear's mission to Khiva in 1839 to obtain the release of Russian hostages and thereby deprive Russia of a *casus belli* against the Khanate is well described. Shakespear succeeded and actually went to Moscow—an appalling journey. Although only twenty-nine, he was knighted. On the conclusion of this mission he returned to India and joined Pollock with his "avenging army" in its march on Kabul in 1842.

Low's first trip Home was in 1842, and we have an interesting description of the Overland Route and of Aden, which had only recently been taken over. The Egypt of the day was by no means so uncivilized as many imagine, and the journey across that country was neither too uncomfortable nor devoid of interest. During the Mutiny, Low was at Calcutta as a Member of the Council, but we have the adventures of sundry kinsmen, the chief of whom was his son, Robert Low, of the 9th Bengal Cavalry—the future Sir Robert and C.-in-C. of the Bombay Army.

If the reader can overcome prejudice, introduced by details of family interest, he will find this book has much to commend it.

The War in Outline, 1914-1918. By Liddell Hart. (Faber & Faber, Ltd.). 5s.

The author's main contention is that the higher the plane of war, the more the solution of its problems depends on wide knowledge, broad-outlook and depth of thought; and the less comparatively on technical experience. He is, however, careful to say that a knowledge of military technique is not unnecessary. He makes the point that a civilian soldier who acquires this knowledge quickly may have an advantage over the man who has taken thirty years to climb the military ladder.

NAVAL

Les Corsaires du Sud et Le Pavillon Etoile. By Lieutenant de Vaisseau Lepotier. (Paris, Société d'Éditions géographiques maritimes et coloniales). Frs. 16.

This is a short and valuable study of the operations of the southern commerce destroyers during the War of Secession 1861-1865. Lieutenant Lepotier traces, examines, and analyses the work of these vessels, the various ways in which the Southern States used their main force at sea, and the measures undertaken by their opponents. Remote as their operations may appear to us and different as the vessels and the combatants were from those of the late war and of to-day,

their study has an eminently practical value. It illustrates to the full the continuity of principle. Admiral Castex, who provides a preface, very properly observes that this incursion into a remote past is definitely fruitful and that it is much to be regretted that attention had not been directed before 1914 to the experiences of a half-century earlier; for we see the same errors made, and the same methods producing the same results. In one respect, thanks initially to Admiral Tryon and later to the Committee State Insurance of Shipping, we avoided, though by a narrow margin, one of the misfortunes from which the Northerners suffered. Having no system of insurance, their vessels either would not venture to sail or were transferred to foreign flags with disastrous results to the American merchant marine. But in other respects many of the errors of the North were repeated in 1914. The system of seeking for the enemy raiders in the broad ocean proved as fruitless as it was to prove later. Convoy, accorded to the important Californian trade, proved a successful measure, but the unconvoyed trade suffered. The shipping of the Southerners, amounting to some two and a half millions tons, lost about three hundred ships of some 120,000 tons. But the direct loss of tonnage was a lesser injury than the indirect losses caused by panic, fear of sailing, and the holding up of ships—precisely as we experienced, particularly in the case of the "Karlsruhe."

Of more immediate application is the lesson then learned that it is impossible to substitute endurance for bases in the work of commerce protection, for no matter how great the endurance which it is possible to confer it will not enable defence to be given. Many millions might be saved if that lesson were applied to construction to-day.

The Northerners had in their employ for the defence of their shipping no fewer than 79 cruisers in 1862-63—a number bearing no relation to the number of Confederate cruisers; yet to-day we see agreements in relation to cruiser forces based upon the false idea of relativity, and a Government of a few years ago announcing that the needs of the far greater, and far more vital, British commerce, could be fulfilled with fifty cruisers. The diversion of effort produced by the commerce destroyers is also noticeable, as it has always been in the past. Had it not been for that diversion, the blockade of the coast would have been more effectively and severely maintained.

The book is written with that clarity which characterizes French naval writings and thought. It is an excellent example of the value of the study of naval history as an instrument in strategical education. Admiral Castex's preface contains a succinct summary of some of the principles of this branch of war at sea.

The Battle of Jutland. By Commander H. H. Frost, U.S.N. (U.S. Naval Institute, Annapolis; and B. F. Stevens and Brown, London). 20s.

This book can only be recommended to those who have already studied, not only the battle of Jutland, but also the rest of the naval operations of the late war from less biased and less unbalanced sources. Such students will appreciate the painstaking efforts which have been made to collect and present the details of the battle in this volume; but they will also be able to detect the hypercritical attitude of an author whose object appears to have been to interpolate into his narrative a running fire of comment on British mistakes—sometimes warrantable, but too often based on false deductions or pure imagination. A tendency to be wise after the event and to show how differently things would have been done by the U.S. Navy is a recurring source of irritation to the reader.

Typical of undigested history is a page devoted to discussing the effect of "the

annihilation of the High Seas Fleet at Jutland" on the German submarine campaign. No-one who has brought a trained mind to bear on a study of the conditions under which the rival fleets met and fought can now seriously argue that it was possible for Jellicoe to have "annihilated" the High Seas Fleet in little more than two hours of low visibility and before darkness fell. Academic discussions of this kind having no relation to realities do not assist the professional study of the lessons of history. Commander Frost's condemnation of the handling of the British fleet and the motives which he alleges inspired it are based on a distortion of Jellicoe's principles where they do not rest on pure generalizations. He seldom attempts to indicate exactly when and where a false step was made or, if he does, he fails to show what would have been the logical result of an alternative course of action.

Every move at Jutland has now been analysed and criticised over and over again at our own Naval Colleges and Tactical School, and the more the handling of the British main fleet is scrutinised the more apparent does it become that the one man who almost invariably gave the right answer throughout the mists and confusion of the battle was Jellicoe.

It is fair to note that the concluding chapters of this book were written by Mr. E. A. Falk from notes left by Commander Frost, after the latter's death; but the publisher emphasises that the "thought and point of view" of the original author have been carefully preserved.

The general compilation and excellent plans are worthy of such a patron as the U.S. Naval Institute. We regret that we cannot say as much for the tone of this weighty production or for its value as naval literature.

The Realities of Naval History. By Brian Tunstall. (George Allen & Unwin, Ltd.). 6s.

Within the limited scope of a small volume of some 200 pages, Mr. Tunstall gives a broad outline of British Naval History. In his preface he defines real history as being: "the plain story of how the British have used sea power to acquire and maintain imperial possessions and trade, and to protect their own island from invasion."

He commences with a reference to the first English book dealing with sea power; "The Libelle of Englyshe Polycye," written five hundred years ago. In successive chapters he traces the increasing influence and importance of the sea on national affairs, and the gradual development of the country's naval power. The strategic methods employed in the utilization of the sea forces and the connection with contemporary policy are briefly shown. Details of battles and tactical movements are omitted as obscuring the realities of the campaigns. Picturesque incidents and personalities, however much they may inspire the anecdotes connected with them, are, in the author's eyes, merely part of the fog of war.

Here and there his judgments are sweeping, but on the whole they are based on solid grounds. As an introduction to the serious study of naval history this outline is valuable. Having said this, it is necessary to make the reservation that Mr. Tunstall is not too explicit concerning the degree to which the attainment of decisive results is directly attributable to the employment of sea power. The treatment of so vast a subject in such a compressed form is bound to leave an impression that not enough has been said if more than a superficial understanding of the problems involved is to be gained.

The closing chapters deal with the transition period from sail to steam, up to the end of the XIXth century. The great lesson emerging from the author's short

dissertations is that efficient administration, skilful direction, ample material resources, and a well-trained, contented personnel are the principal factors on which success depends. Despite advances in scientific methods of warfare, these factors will always remain unchanged.

Mr. Tunstall completes his interesting study of sea power as an instrument of national policy with a comprehensive bibliography and an admirable index. The book is well written and worthy of attention.

Naval Warfare. By Commander John Creswell, R.N. (Sampson, Low, Marston & Co.). 10s. 6d.

With an appreciative introduction by Admiral of the Fleet Sir Roger Keyes, it is not surprising that this study of naval warfare should breathe the spirit of the offensive throughout its pages. But, if the young officer, for whom Commander Creswell's book is avowedly written, is to be fitted to practise what is so constantly being preached to him, his seniors must realize that "the offensive spirit" will only function if it is nurtured in a school where "initiative" is encouraged in practice and not only in precept. Initiative implies originality and independence in outlook and character; and these are of more value in war than volumes of historical examples, principles, memoranda, and generalizations.

Space will not permit us to praise or criticise this volume in detail; but it can be commended as following fairly faithfully the trend of present-day teaching in the matters with which the author deals. It is well written and can be read with profit by officers of the sister Services.

Skagerrak. By Konteradmiral Friedrich Lütow. (Müller, München).

This is a 'pocket' history of the battle of Jutland (in German). It contains nothing very new, but it is written in a friendly spirit; the author particularly commending the fine behaviour and discipline of the British fleet.

It is interesting to note that when Prince Henry of Prussia asked Scheer what he had in mind in the second battle turn—at 6.55 p.m., Scheer said 'gar nichts' (nothing at all). Times in this narrative are one hour ahead of G.M.T. There are some good little plans.

Gone for a Sailor. By Captain Lionel Dawson, R.N. (Rich & Cowan, Ltd.). 15s.

This is another entertaining and pleasantly written autobiography by the author of *Flotillas*. It will recall the Navy of their own times to many officers who entered the Service about 1900, and they will live in it again with Captain Dawson in his anecdotes of early days in a gunroom and Acting-Sublieutenant's time at Greenwich and Portsmouth, and his recollection of the pride of promotion and a cabin, and the joys of a first command.

It is evident that, to this writer, the liveliest memories of his career centred in torpedo craft. Big-ship time, of which he also did his share, is very necessary for the destroyer officer; but no one who reads this admirable account of naval life in the years before the War, and who has taken to heart the lessons of the past twenty years, can fail to detect the unwritten moral of this tale that "small ship" experience is indispensable to the "big-ship" officer who aspires to higher things.

Its easy style and familiar setting make this book a pleasant relaxation from tougher works which it is so often our duty to review.

MILITARY

Manual of Military Law, 1929, Amendment No. 12, 1236. Published by command of the Army Council. (H.M. Stationery Office), 6d.

Ever since its first publication in 1884, the *Manual of Military Law* has contained a chapter devoted to the Laws and Usages (or Customs) of War on Land. At first this consisted of little more than excerpts from Vattel and other classical publicists; but in 1914, when the sixth edition was produced, the War Office wisely decided to employ the services of a trained international lawyer, and the late Dr. Oppenheim collaborated in the preparation of an entirely new chapter on the subject, in which the Hague Rules of 1907 were incorporated. But chapter XIV was reproduced, with a few extra annotations, in the seventh edition of the *Manual*, published in 1929, the editors excusing themselves for not re-writing the chapter on the ground that there was at that time no certainty as to the actual state of international law on the question. When it was announced recently that a revised chapter was to be added by way of amendment, we confess that we looked forward to an up-to-date and authoritative re-statement of the Rules of War interpreted in the light of the experiences of the Great War. We anticipated that some expert of the calibre, say, of Professor Brierly or of Dr. Spaight, of the Air Ministry, would have been invited to overhaul the whole treatment of the subject.

But in this hope we are disappointed. This revised chapter is no more than a reprint of the 1929 edition, itself practically a reproduction of the 1914 chapter, with the interpolation of the few amendments introduced by the Geneva Protocol of 1925, dealing with the use of gas, and by the two Geneva Conventions of 1929 upon the Red Cross and Prisoners of War respectively. The numbering of the paragraphs has been retained, and, in order to make room for the necessary additions, sub-paragraphs have been introduced: thus paragraph 110 in the Prisoners of War section has seven sub-paragraphs, numbered 110a to 110g. The result is that the official British statement of the Rules of War remains, subject to these small additions in almost precisely the same wording as in 1914. Of course Dr. Oppenheim's draft was, in its time, a very complete and learned account, and in so far as it is based upon the Hague Rules and other corrections which are still in force, it is unexceptionable; nor is it, in its main outline, in any way misleading. But it is obvious that on many points of detail, the experience of the Great War entails the necessity of a careful reconsideration of the binding force of the pre-war regulations, and this has not been attempted.

In particular, the annotations, which were intended by Dr. Oppenheim to furnish illustrations of the working of the rules in practice and also authority for many disputed legal points, are left almost as he wrote them in 1914. There must be at least ten times as many references to the Franco-Prussian and Russo-Japanese wars as there are to the far more important examples which might have been gathered from the daily occurrences from 1914 to 1918 in every theatre of war. And, except for a single remark taken from Garner's "*International Law and the World War*" (1920) there is no citation of legal works published since 1914. Much material is borrowed from Holtzendorff (1885-1889) and from Ariga's work (1908) on the Russo-Japanese war; but the student is left ignorant of the existence of such important post-war discussions as those of Garner (*op. cit.*), of Fanchille (Vol. II, pp. 1-338, 1921), giving the French expert criticism of belligerent practice, of Strupp, of Liszt and of Schucking. Further, on the subject of Requisitions, we might have expected that some reliance would be placed on the decision of the Mixed Arbitral Tribunals; and, on Argosy, there is no mention of the conditions

applied by our own courts in *The Zamora*, nor of the exhaustive treatment of the subject by Bullock (B.Y.B., 1922). In article 230, note 1, we are told that the rule that the hoisting of the white flag does not necessarily impose upon the attackers the duty of ceasing fire is accepted 'by all the authorities'; but the latest authority granted is Ariga, dated 1908. Oppenheim, *International Law* (5th edition), published only last September, makes the point (Vol. II, p. 427), and this would have been a better citation. And for the definition of blockade, the reader is still referred to the old 1912 edition of Oppenheim's work, as if it were the latest.

We could give many more illustrations, and at first sight it seems a pity that a thorough revision both of text and of notes has not been undertaken. It may be thought by some, however, that there is sufficient justification for the policy of an unrevised re-issue in what is said in the note to Article 6: "The experiences of the Great War subjected the Hague Rules to a severe test. On the whole . . . the rules did not work badly and their absence would have been disastrous. At some future time they will require to be reconsidered at an international conference and brought more up to date." When this happens, no doubt the Army Council will place the revision of this chapter in the hands of a competent lawyer, with instructions to carry out as thorough a reconstruction as was undertaken in 1914. We need only add that the terms of the new convention of 1925 and 1929 have been adequately summarized in this edition, though some reference should have been made to the reservations subject to which we ratified the Gas Protocol. These will appear, no doubt, when the appendices, containing the actual words of the convention, are printed.

Canada and the British Army. By C. P. Stacey. (Longmans, Green & Co.). 10s. 6d.

This closely reasoned and well documented volume published for the Royal Empire Society traces the stages by which the British garrisons were withdrawn from the North American Colonies. The process of reduction was started by Lord Grey, War and Colonial Secretary, in 1846 and completed in 1871 as a consequence of the Cardwell reforms. The Colonial garrison system laid a heavy burden upon Britain's financial and military resources. The reduction of these garrisons was initiated as a measure to reduce taxation. By far the greater part of Imperial Expenditure upon the Colonies came under the head of military charges. In the Province of Canada they amounted to over nine-tenths of a total of just under half a million, and the Province's contribution to its own defence was limited to a militia grant of £2,000. Lord Grey's policy was ably, though cautiously, carried out by Lord Elgin, the Governor-General, and during his seven years of office the Imperial military expenditure was reduced by a third. The Crimean War accelerated the reduction of British garrisons abroad, and in Canada the garrison had shrunk to one regiment of the line and two companies of artillery with the Royal Canadian Rifles, a regiment of the British Army, permanently localized in Canada. But diplomatic difficulties with the United States speedily led to an augmentation of the garrison. The outbreak of the Civil War in America caused a further increase, and after the Trent affair a small army was despatched, raising the total of British regulars in North America to 18,000. The Fenian troubles, which followed the close of the war and which Palmerston has foreseen at its commencement, prevented any large reduction of this force. It was the triumph of the Prussian armies on the Continent and the consequent revolution in European military organisation, which caused Cardwell, Gladstone's first Secretary for War, to sweep away the colonial garrison system and recall the troops, in order to defend the heart of the

Empire and by his "short service" system build up a reserve on Continental lines. The process was somewhat delayed in Canada by the outbreak of the Riel rebellion, which necessitated the Red River Expedition, but on 11th November, 1871, the last British troops bade farewell to Quebec.

The Australian Victories in France in 1918. By General Sir John Monash. (Angus & Robertson Ltd., Sydney). 6s.

This "individual memoir," as the author styles it, would be the better for a few sketch maps. Otherwise its matter is clearly presented, and it gives an interesting glimpse of the mental processes of a most successful Commander. If 'genius' be the art of taking infinite pains, it must be ascribed to Sir John Monash, who in his operations left as little as possible to chance. A born soldier himself, he was happy in commanding a Corps of first-class fighting men; and who shall grudge them the conviction that the "turn of the tide" was chiefly their work. Particularly interesting is the account of the co-operation between the Australian infantry and the tanks (July 4th). "Most of the enemy encountered by the tanks readily surrendered." The tank had become a bogey, excusing the surrender of large bodies or whole units of the demoralised enemy, and finally of Ludendorff himself.

The War of the Guns—Western Front, 1917-1918. By Aubrey Wade. (B. T. Batsford Ltd., London) 7s. 6d.

This is a very human, straightforward and vivid account of the experiences of a signaller attached to a battery on the Western Front. It does not pretend to be anything beyond the author's personal experiences during the last two years of the War. There is no moralising and no attempt to draw lessons for the future, unless it be to leave the reader with the impression that churning the earth to pieces with high explosive for years on end in order to be rid of an enemy is not a form of fighting which is likely to recur. Swifter methods of deciding the issue will be adopted in a future conflict.

Almost every other page is interleaved with a truly wonderful collection of photographs selected from the vast collection of the Imperial War Museum. These and the author's simple, but often poignant, letterpress tell a story of heroism, hardship, and devotion to duty which, because it is typical of the rank and file in the Great War, should be read by a rising generation to whom it is already only history.

Military Organization and Administration. By Brigadier W. G. Lindsell, D.S.O., O.B.E., p.s.c., R.A. (16th Edition, Gale & Polden, Ltd.). 7s. 6d.

This book has been revised in accordance with the new organization and the changes in the machinery of maintenance have been noted.

The Liao-Tung Campaign. By Lieut.-Colonel A. H. Burne, D.S.O. (William Clowes). 5s.

In view of the fresh light thrown on this campaign by the Russian Official History, this publication is most opportune. The author's main object is to show the bearing of personality on leadership and to bring out the human interest of the story. In this, he has been most successful.

An Outline of British Military History, 1660-1936. By Majors D. H. Cole and E. C. Priestly. (Sifton Praed, Ltd.). 12s. 6d.

This book does not attempt to give a complete account of all the campaigns in which British and Indian troops have been engaged during the last three centuries. Its purpose is rather to provide a clear outline for the use of students, who want such a sketch as a preliminary to the more detailed study of individual campaigns.

The Infantry Battalion in War. By Lieut.-Colonel W. R. Wheeler, Infantry U.S. Army. (The Infantry Journal, Inc.). \$3.00

This book is a study of the problems which confront the battalion commander on service. As the author says: "it is an effort to be subjective rather than objective; synthetic rather than analytic; tactical rather than technical, and to bring out principles rather than the details of practice."

An Elementary Study of Appreciations, Orders, and Messages. By Major W. K. M. Leader, M.C. (Sifton Praed, Ltd.). 7s. 6d.

This volume is chiefly concerned with the making of Appreciations, the issue of Orders and Instructions, and the writing of Messages, by the commander of a small mixed force, consisting of a battalion and attached troops. The Field Service Regulations are, as the author states, mainly written for forces of larger size and the details are not always applicable to the operations of a smaller force.

In an endeavour to make the work of particular value to candidates for Promotion Examinations, a chapter on the technique of handling a tactics paper has been included.

This book, which is based on the latest edition of F.S.R., is up-to-date and can be confidently recommended to students.

Mountain Warfare on the Sand Model. By Major D. B. Mackenzie. (Gale & Polden). 3s. 6d.

This little book contains, as Field Marshal Sir Claud Jacob says in his Foreword, much that is useful to units which are stationed on the North-West Frontier of India or may find themselves having to soldier there. The author has produced a number of simple schemes in Mountain Warfare dealing with problems in picketing, advanced and rearguards, camp defences and protection of arms and ammunition, for work on the sand model. The paragraph on "The Suspicious Mind" is of special interest and value and the author points out how subtle the Pathans are compared to ourselves. Nevertheless he shows how our troops can outwit the Pathan if they know how to set about it. Skill in solving the varied problems of mountain warfare can only be acquired by strenuous work and hard thinking. This book should be of great assistance to those wishing to study this important subject.

REGIMENTAL HISTORIES

Regimental History. By Major W. C. Likeman, Army Educational Corps (William May & Co., Ltd.). 3s. 6d.

The title of this little book is somewhat misleading; actually it contains a chronological survey of all battle and campaign honours of the Army with their locations and dates.

There are no less than 393 such honours, of which 219 were earned prior to the Great War. The first is, of course, "Tangier"—1662-80, but the last—"The Great War," 1914-19, awarded to the Royal Jersey Militia only, may not be so well known.

The survey would be more complete if the Regiments of the Indian Army were mentioned, when appropriate, in the column of remarks. The 1st Battalion 7th Rajput Regiment is the only Indian unit to be so noted. The honour "Mysore" is shown as having been awarded to the Royal Munster Fusiliers only, whereas at least six Indian Regiments are entitled to this distinction. Nevertheless this volume is of great interest and value to students of military history.

The History of the East Lancashire Regiment in the Great War, 1914-1918.
(Littlebury Bros., Ltd.).

The story of the part played by the seventeen battalions of the Regiment is detailed in this volume. The unit was represented on every front from France to Mesopotamia and four members gained the V.C.

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